The Builder.

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ILLUSTRATIONS.

Some Designs and Illustrations of Executed Works by the late John D. Sedding :—

Design for the Restoration of the Great Screen, Winchester Cathedral ..... *Extra Large Ink-Photo.*
Design for Decorated Altar in Electrotype or Beaten Metal ..... *Extra Large Ink-Photo.*
Chancel Screen, St. Mary's Church, Stamford ..... *Single-Page Ink-Photo.*
Tower, Proposed New Church at Ealing ..... *Single-Page Ink-Photo.*
Portrait of the late John D. Sedding ..... *Single-Page Engraving.*
Sketch for Credence Table, Holy Trinity Church, Chelsea ..... *Single-Page Engraving.*

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Wren and Hampton Court.

THE third volume of Mr. Law's valuable and interesting "History of Hampton Court"* carries on the account of the Palace from the time when William III. came on the scene to the present day, and therefore enters on a new architectural era in the history of the building; the Gothic Hampton Court of Wolsey and Henry VIII. disappears to a great extent, shouldered out by the buildings substituted by Wren.

This long low prim façade of Wren's, forming the present garden front of the Palace, has become so much identified with the place that one almost forgets to think what the house must have been like as left by Henry VIII. A very noble and picturesque-looking mansion the garden front must have made, with its variety of outline, its decorative chimney-stacks, its rich-toned red brickwork. Mr. Law gives the outline plan of it superimposed on Wren's plan, showing that the extent of the building was little altered under Wren, whose new building does not cross the farthest projections of the old plan, though it fills up with a straight line the various bays and promontories left by the plan of the Gothic Palace. How far more interesting, architecturally, this old garden front must have been than that which we now see, it is easy to imagine, though it would hardly harmonise so well with the formality of the gardens.

Hampton Court as William and Mary found it appears to have already possessed the first outline for their treatment of the garden, for Mr. Law quotes from Stephen Switzer's "Ichnographia Rustica" to the effect that "it is certain that Prince (Charles II.) did plant the large semicircle before the Palace at Hampton Court, in pursuance of some great design he had formed in gardening"; referring to the semicircle of lime-trees which runs round the outer boundary of the Palace garden, between it and the meadows. The western portion of the long canal, nearest the Palace and within the semicircle of trees, may have been filled up by Charles II. in preparation for his scheme, or this may have been done afterwards by William III. when he resolved to lay out the space as a fountain-garden.

William III. seems to have been at once taken with Hampton Court, and very soon it was rumoured that as the Palace was "so very old built and irregular," there was a design of raising new buildings there for the King and Queen's apartments, and Wren was commissioned to carry out the work. Mr. Law brings before us various citations bearing on Wren's intentions in the matter; one from Horace Walpole (on the authority of a descendant of Wren's) to the effect that he had proposed a design for the alteration of the ancient Palace "in a better taste, which Queen Mary wished to have executed, but was overruled"; and we entirely concur with the author that if this meant additions in a sham Tudor style it was better that Wren's hand was withheld from this, for his own sake as well as that of the building. "Altogether," says Mr. Law—

> "We heartily wish that William of Orange, foreigner as he was, had never thought of laying his irreverent hand at all on the ancient home of our English Kings and Queens. That he should have had any sentimental feeling about preserving and perpetuating the charming old red brick courts with their mullioned windows, quaint gables, and moulded chimney-shafts, or the curious chambers in which so many interesting events had occurred—with their fretted ceilings, their latticed casements, their old stained glass, and their gorgeous tapestries, could not be expected; but leaving the old Palace intact, he might have carried out instead the idea, which he is believed to have entertained at one time, of erecting an entirely new Palace at the west end of the town of Hampton, on an elevation about half a mile from the River Thames, which design, however, is said to have been abandoned on account of the time necessary for such an undertaking."

The object of William III. apparently was to create a kind of English Versailles, as there is evidence that the building executed by Wren forms only a portion of a larger intended design; though, even as part of a more extended scheme, the architectural character of the garden elevation is so deficient in dignity and palatial expression that a building carried out on such lines could hardly in any case have had any claim to be named with Versailles. There is a prim repose and propriety about it, no doubt, and it is in good taste in a negative sense, but the long unbroken balustrade, the weak and ineffective treatment of the centre, the want of accentuation of the angles, and the mechanical regularity and repetition of the window designs, combine to stamp this front, in spite of its architectural parentage, as a piece of commonplace quite unworthy of its position. It is possible, or even probable, that to some extent money was at the bottom of this failure. William could not have had very much to spend on palaces at that time; and indeed it appears (as we shall see further on) that the expense that was incurred was not always discharged; and it may be that Wren was doing his best under orders to produce a new palace at as little cost as possible. The architectural treatment of the quadrangle, or "Fountain Court," as it is called, appears more satisfactory, though there is not much more in it, partly perhaps because the situation is one in which a quiet and unobtrusive architectural treatment is felt to be more in place, partly because an arcaded cloister round the ground story of a quadrangle is a feature which looks pleasant and effective with almost any architectural treatment; the decorative details also are better here.* This we have always regarded as the most satisfactory portion of the external treatment of Wren's buildings at Hampton Court.

Some of the money (or of the estimated expenditure) which appears to have been saved on the architecture, evidently went in the fountain garden which was laid out in front of Wren's façade, and of which Mr. Law reproduces an old engraving, date 1695. Formal as the garden is now, it was much more so then. In addition to the central oval pond which still remains, there were four other smaller ones, two intercepting each of the side walks leading from the angles of the Palace front to the centre of the garden, of course in a perfectly symmetrical manner. The two nearest the Palace were square ponds with a semcircular bay on the face of each square; the two further ones were circular; each had its small fountain duly rising in the centre; the large pond had a mermaid holding up the spout of the prin-

* "History of Hampton Court Palace." Vol. III. Orange and Guelph Times. Illustrated with engravings, etchings, maps, and plans. By Ernest Law, B.A., Barrister-at-law. London: George Bell & Sons. 1891.

* We may remind the reader that we published levations and details of this Court, in the *Builder* for March 24, 1888, from measured drawings by Mr. P. L. Marks.

cipal fountain-jet in the centre, while minor jets were dispersed around it. The spaces between the broad centre walk and the side walks were planted round with two forms of small cone-shaped trees regularly spaced and alternating systematically, with a double line of low (box?) border connecting them, and the whole enclosed space laid out with an artificial design in flowing curves, we presume little box hedges, exactly repeating on each side,—

"Grove nods to grove, each alley has its brother,
And half the platform just reflects the other."

The whole looks just like a toy garden for children. A garden in close connexion with a Classic elevation should no doubt be symmetrical in its main lines, but for enjoyment we prefer Hampton Court Garden as it now is, at all events to sit in and walk about; William III.'s garden may have looked more decorative perhaps, from the upper windows of the Palace, where one could look down on the pattern. But we have a love for a lawn pure and simple, in connexion with architecture, and nothing goes better with English Renaissance architecture, as Cambridge can testify. We should have had no sort of objection to retaining, however, the minor ponds and fountains, which have now been done away with; they would have been all the more effective for being in the midst of some foliage and flowers, instead of these mere hedge-patterns.

Mr. Law relates how there was a failure in the building at an early period of the work, when some workmen were killed and others injured by the falling of a wall, and both Wren and the Comptroller of the Works, one Talman, were called to account for the same before the Lords of the Treasury. Talman was himself an architect, and appears to have looked on Wren with eyes of jealousy; and one can well imagine that Wren, with all his amiability of character, was not likely to put up mildly with any interference with his architectural function. The scene as transcribed by Mr. Law from the account in the Treasury papers, is characteristic enough:—

"Mr. Bankes (a member of the Board of Works) observed that 'there are twenty-four peers next the garden, and but four stones crackt; and ye cracks no bigger than a haires breadth; that the building, every day it stands, is stronger and grows lighter.' 'Not at all,' replied Talman, 'every pier is crackt, that one may put his finger in.' Mr. Oliver (another member of the Board) retorted, 'None of ye masons Mr. Talman brought understand so good a work as this.' 'The masons I brought,' replied he, 'are those that Sir Christopher employed. The piers are all cracked and hollow, and crampt with iron to keep them together.' 'What was done for greater caution,' answered Sir Christopher warmly, 'ought not to be maliciously interpreted.' 'Pray,' suggested Talman, 'let 6 be chosen by mee, and 6 by you to judg in this matter.' But the Lords thought, 'Thy'l never agree, one part will say one thing, th' other another.' 'I'le putt it on this,' interposed Wren, 'that a man cannot putt his finger in ye cracks.' 'No,' rejoined Talman, 'because you've had them stopt.'"

On this, certain "indifferent persons" were appointed to view the work and see if the building would stand or not. It is not surprising to find they reported in favour of Wren, who was not a likely man to allow bad work, though it is true that his iron cramps would hardly pass muster now.

The want of two commodities, money and Portland stone, greatly hindered the progress of the work; the Queen writing to the King on June 24, 1690, that there seemed to be many obstacles to the completion of the new building; that "she heard of so much use for money and found so little of it" that she feared the work must be delayed, especially as "the French are in the Channel, and at present between Portland and us." Mr. Law notes the interesting fact that the window dressings of the top story windows on part of the inner side of Wren's quadrangle were put in with Bath stone, in consequence of this famine of Portland, and that this decayed so much that it was a few years ago replaced with Portland, the stone which the Queen longed for being thus at length supplied after a lapse of nearly two centuries.

The popular idea that Huntingdon Shaw designed the celebrated wrought-iron screens formerly in the gardens seems, according to Mr. Law's information, untenable. He reproduces the design from the "Nouveau Livre de Desseins, Inventé et Dessiné par Jean Tijou," 1693; and while there is no mention of Shaw's name in the old Treasury papers, Mr. Law found in a "List of Debts of the Office of Works in 1701," preserved in the Record Office, an entry under the heading "Hampton Court Gardens," of 1,982*l.* 0s. 7d. due to Jean Tijou, smith." So that we must probably be content to regard Shaw as the accomplished executant of Tijou's designs; at all events, as Mr. Law positively affirms, Tijou was the only person recognised by the Board of Works and the Treasury. There is no doubt the possible explanation that Shaw really did the work and Tijou had the credit; an arrangement not unknown in modern days, at all events. We must entirely concur in and support Mr. Law's protest in favour of restoring these screens to their old situation. Their meaning and their effect will be best seen in the situation for which they were designed, and they form an important part of the adornment of the palace garden.

A curious item in the book is Wren's specification, if it may be so called, and estimate for fitting up the interior of the Rooms of State at Hampton Court, now preserved in the Record Office. This was after the death of the Queen, and after the fire at Whitehall Palace had given the King an excuse for turning his attention towards residing altogether at Hampton Court. A curious item in this is that it was intended to have marble for the window seats, which were in the end made of oak instead of marble; certainly a much more suitable treatment. As to Gibbons, about whose work the author has a good deal to say, we can hardly share his enthusiasm. Gibbons was a great and remarkable craftsman, but not in the highest sense an artist. Concerning Verrio and his ceiling paintings Mr. Law seems to have formed a more just estimate; and we quite agree also in his judgment as to the grand staircase, that it is a fine and sumptuous work if we look only to the general effect and pass over the details.

William III.'s patterns in the fountain garden were apparently removed in the early part of the eighteenth century, and replaced by plain lawns, from the plan which Mr. Law gives of the garden at that date; and at the same time the minor basins and fountains were suppressed. The rows of little conical trees round the borders, at regular intervals, were however still retained, as shown in the view by Rocque of the same date, "The Palace and Gardens in the Reign of George II."

Part of Wren's scheme was a great court-yard and entrance on the north side of the Palace; this was to be centralised in relation to the Bushy Park-avenue, which would thus have become a portion of the general scheme. Mr. Law reproduces the plan for this in the possession of the Office of Works. This shows two long wings stretching northward for about 300 ft. in two parallel lines, enclosing a large forecourt rather more than 200 ft. wide between them, the sides of the wings towards the court being colonnaded. The idea is somewhat the same, in fact, as that of the colonnaded wings in front of St. Peter's, only that the lines are straight instead of curved. The northern side of the great hall was to form the central feature at the upper end of this court, and external flights of steps up to it are shown, as if the intention had been to make the hall a grand entry to the Palace. As this would have involved entering at the side of the hall, probably by cutting doorways in it under the windows, it can hardly be regarded as a very happy idea from an architectural point of view. In fact, there could hardly have been a greater architectural misuse of a hall with a timber roof than to have entered it from the side under the springing of the roof, instead of having the perspective of the roof facing the spectator on entering. It seems probable, however, from the facts Mr. Law gives us, that even this was only a half measure, and that what William III. (and not improbably Wren also) would have liked, would have been to have removed the whole of the Tudor buildings, hall and all, in order to rebuild this portion completely in the Renaissance style; and perhaps we may feel thankful that William was short of funds, or we should have had none of the Tudor palace left at all. Undoubtedly, as Mr. Law says, the approach thus planned would have been a grand one as far as the new portion was concerned, but the architectural misuse of the hall by turning its flank into a front would have gone far to counterbalance all its other advantages.

We have followed the history of the Palace as given in this concluding volume of Mr. Law's book mainly in as far as Wren was concerned in it. For the remainder of its history, and the architectural and structural changes (not very important) of more recent date, and for the variety of social history connected with the place in the eighteenth century, we must refer the reader to Mr. Law's well-filled and admirably-written pages. We congratulate him on the successful conclusion of an arduous task, whereby he has produced a book full of information as well as pleasant and entertaining to read, and which forms a worthy record of one of our most interesting national buildings.

A NOTE ON THE ARTISTIC LIFE AND WORK OF JOHN D. SEDDING.

BY W. R. LETHABY.

It is somewhat the fashion now to decry the enthusiasm of the "Gothic revival," and to think of it as having failed; but the causes which promoted it were deeper and its consequences were wider than many thus thinking suppose. It has not gone by resultless,—no influence can; but from it are growing many shoots hopeful of blossom and of fruit in the future.

In the summer days of this movement John Sedding became a pupil of the late G. E. Street. Precisely, this was in the year 1858, and his brother Edmund was already a brilliant member of a brilliant group who, about this time, came under the remarkable influence of Street. William Morris had been in the office for a year, intending then to become an architect. Philip Webb was a pupil, and Norman Shaw came back here from his foreign studentship.

Sedding soon developed views, rather a reaction from, than a direct result of the teaching, and devoted himself to a study of the later types of our Gothic, found in the village churches; the especial Englishness and home-wrought intimacy of which appealed to his regard. And this, the affectionateness, if I may so express it, of his mental attitude toward his art is, I think, the dominating quality of his whole work. With this went a sensibility nervously alive to proportion, mystery, splendour, colour, sheen; in a word, the æsthetic sense.

However much there was of gift in his genius, it was the genius of hard work; and I have heard him say how at this time even the lunch hour was often spent in working at the miniatures in the MS. room of the British Museum. In 1863 he left Street, and later, in 1865, joined his brother at Penzance, to whom failing health made country residence necessary. Edmund died in 1868, and soon after John began to work at Bristol, where, in 1872, he married Miss Rose Tinling.

During this time he matured his exact knowledge of Somersetshire art, a knowledge of village churches as they were built, and a feeling for them as a part of the landscape, as natural formations and growths of the countryside—not as things described and drawn in books. He ever felt this local character, and the tendency that made him respond to our national character in architecture made him feel the especially local type,

so that Gothic art was not merely the art of England, but of Yorkshire, Norfolk, Somerset, or Cornwall. Certain localities produced particular varieties, which were the natural consequence of the habitat: such was his botanical comparison.

Soon after his marriage he came to London, and lived at 18, Charlotte-street, Bedford-square; and his practice at this time being small, he made one or two designs "in the air." One was a low, rambling house, mainly of wood, called "The Grange," and another, a large house on a regular plan, of transeptal form, a high, manorial sort of thing that would naturally be called "The Hall." These are both of them so exquisite in their feeling for the expressiveness of home architecture, that could they only have been built by the old men, of the old materials, and have been lived in by the old people in the old unhurrying way, there would not have been in England anything more beautiful.

These were also entirely sympathetic and beautiful as drawings. Those who only knew the curious roughness and excited manner of his later sketching, may be surprised to hear that he was one of the first of recent architects who endeavoured really to learn to draw.* He came under the influence of Mr. Ruskin's work, setting himself to copy the fine plates of the "Seven Lamps" as a preliminary training. Personal contact with the great teacher followed, and, for a time, he drew definitely under his guidance. The drift of the teaching, as he remembered it, was that, however useful a diagram might be, a drawing did not fulfil its purpose until it represented the light and shade of the surfaces accurately in balance and gradation—"represented texture." There were several drawings of detail made at this time in France, excellent in their careful unaffected handling, and some good studies of flowers in red chalk or in body colour.

Much of his design at this period was for embroidery and goldsmiths' work; in the former, his beautiful ordering of natural flowers was occasionally as beautifully wrought out by Mrs. Sedding; especially of these home works I remember a dress front of trailing honeysuckle; a children's pall,—a gift for St. Alban's Church, which was most appropriately used at his own funeral,—covered with little subjects in panels, and strewn with flowers; and, later, a chalice veil, shown at the Arts and Crafts in 1889.

His practice continuously increased, and much work resulted. An estimate of the main purpose and direction of his effort should be more interesting than a catalogue of churches built. That in Sloane-street,—his finest work,—is still incomplete. It would be vain to attempt description of a building so easily to be seen, so stimulating to the imagination when seen. Its main lesson to us is in his association there with himself of other artists: the sculpture and the painting were to be no mere hack work of ecclesiastical ornamentation, but were to be, and in many cases are, the works of the best living craftsmen.

This was one of the directions in which he was working as a leader of modern effort in architecture. He had a fine impatience for trade art, ecclesiastical ornament, and the conventions of so called appropriateness; he wanted the best work of fine thought, and direct appeal from one mind to another; personal vitality and emotion, not forgeries by day labour, farmed out by contract, of past art for us dead and done. It was the feeling of old work that he felt with penetrating insight, and his originality arose in stimulating himself by a study of old work considered not as mere forms, facts, and dates, but as ideas, as humanity, as delight. If he felt this delight in reading their work, might he not delight others in turn—"by clothing current thought in current shapes?"

His designs were thought of as complete and whole, they were not pieced together from this and that fragment, but he worked out a scheme of composition, a vision of a building standing in its place; so that even in a plan of one of his later churches one might see, in part, "the play, the insight, and the stretch." Then the large handling of the general form was decked out with lovely detail, bright colour, and innocent gaieties of device. In this detail and decoration he gradually cast off the conventions of architectural ornament and the "sacred symbolism" of the handbook sort. In the words of a letter which lies before me, he wanted "fresh life and reality," and again, in a published paper, he says, "We must clothe modern ideas in modern dress; adorn our design with living fancy. There is hope in honest error, none in the icy perfections of the mere stylist." "Instead of Syon cope angels or stumpy Norfolk screen saints, we shall have design *by* living men *for* living men,—something that expresses fresh realisations of sacred facts, personal broodings, skill, joy in nature, in grace of form, and gladness of colour."

Pre-eminently Sedding felt Mr. Ruskin's saying, "that you cannot love art well till you love what she mirrors better." He early in thought emancipated himself from the idea,—surely, when we look back on it, one of the most curious that has ever demented men,—that it is the duty of a modern architect to make believe that he is living four, five, or six hundred years ago, and that his mission is to exercise himself on the forms found associated with a certain decade. While all the past was one art, and all for him, more and more did he free himself from "correct" antiquarian detail and go straight to nature. Again, to quote: "For the professional stylist, the confirmed conventionalist, an hour in his garden, a stroll in the embroidered meadows, a dip into an old herbal, a few carefully-drawn cribs from Curtis's 'Botanical Magazine,'—or even, for lack of something better, Sutton's last illustrated catalogue,—is wholesome exercise, and will do more to revive the original instincts of a true designer than a month of sixpenny days in a stuffy museum. The old masters are dead, but 'the flowers,' as Victor Hugo says, 'the flowers last always.'"

His own vision of a church was that it should be wrought and painted over with everything that has life and beauty; in frank and fearless naturalism covered with men and beasts, birds and flowers, like Andrea's—

> "Four great walls in the New Jerusalem,
> Meted on each side by the angels' reed,
> For Leonard, Rafael, Agnolo and me."

Though he took what he wanted from the past, his architectural books were in very fact Herbals and Natural Histories; Gerarde and Bewick rather than "Styles," "Parallels," "Principles."

I would put these four threads of the tendencies shown by his work together, as expressing in the main the problem before the modern designer, when work, no longer the spontaneous growth of a school, must be reasoned and individual:—

A critical distinction between what is native and what is exotic:

Separation between the living and the dead:

Saturation with the spirit of nature, the source of all art, and the canvas, as it were, on which architecture must be painted, so that in time it becomes almost a part of nature:

Expression of delight in the colour, texture, and forms proper to material, so that design is not mainly on paper in plan and elevation, but is thought out in stone, in brick, in wood.

While Sedding would say that he had but little knowledge of architectural books, he read largely in the best literature, by preference modern, with the exception of Shakespere; and he read aloud with fine interpretation and feeling: to hear "Filippo Lippi" or "How the Bishop ordered his tomb," was to understand so much of Browning.

The gift of music was not denied him, and he wrote with great charm,—a charm peculiar to himself, compounded of deep seriousness of thought and a light playfulness of language. His many architectural lectures were not chronologies and "classifications," but they were fresh personal thought, instinct with real, if informal, criticism, and spoken in a manner that showed his own enthusiasm and stirred the enthusiasm of others. Fortunately, one work of his was already in the press at the time of his death, and we shall have in "Gardencraft" a permanent memorial of some of his later thought. This was the outcome of a paper read in May, 1889, at the Art Workers' Guild,—a society which he helped to found, for the promotion of the closer intimacy of designers and workers in the several crafts, and of which he was the second President.

In sculpture and painting he must needs love the highest, not curious conceits by little masters, but finished and noble work. The solitary photograph on the walls of his own office was a Velasquez, and at home they were of Titian, Buonarrotti and François Millet.

Of his home and religious life, and of himself, apart from his art, it is impossible here to speak. He attached people to him at once by giving and requiring affection. Builders and workmen were his friends, and it was a constant effort with him to re-employ the same. Those in his office were not merely his friends; but they were companions, fellow artists, and fellow 'fellows' to consult, advise, and to play with.

The last three of his fifty-three years he spent at West Wickham, in Kent, in a quiet old house, with a beautiful garden, which was such a deep delight to him that I cannot but think it made him realise the shortness of the time and the swiftness of winter's approach; for he often spoke with settled conviction, yet quite simply and conversationally, of his not remote death.

Could he have known, he would not have esteemed himself least happy in that, though "a thousand doors lead to death," he and his wife would enter together.

* It is perhaps as well to remind the reader that we are not responsible for all the opinions expressed in Mr. Lethaby's interesting and sympathetic *in memoriam* article.

NOTES.

THE Surrey Archæological Society last Saturday visited Ham House, by permission of Lord Dysart, and there was a considerable muster of members and friends desirous to take the opportunity of seeing a remarkably interesting house which is not usually open to inspection. A short paper on the history of the house, or rather of the families which have inhabited it, communicated by Mr. S. W. Kershaw, was read on the terrace to the assembled party, previous to making the tour of the house. Part of the interest of Ham House lies in the fact that it has been so little altered, and still retains a large proportion of old furniture and fittings of the seventeenth and eighteenth centuries. The central hall, laid with black and white marble slabs, and with a gallery in the upper portion, is a fine apartment, and a certain special character is given to it by the treatment of the gallery, the longer sides of which are canted slightly towards each end, not at an angle of 45 deg., but so as to give it the appearance of a lengthened octagon founded on an ellipse. The main staircase, an oak one, of broad and ample dimensions, in short flights with angle landings, is remarkable for the rich treatment of its ponderous balustrade, the supporting portion of which is carved into trophies and coats-of-arms and scrolls, with open *jours* between, in the place of balusters; the work is very sumptuous and bold in character, though not in the most refined taste. The house contains a good many richly-decorated plaster ceilings in very good preservation, which indeed may be said of the building generally, inside and out. The worst feature in it is in some of the comparatively modern (we hope not very recent) re-decoration; some of the

rooms having the architraves of the doors *marbled*, and the carved ornaments gilt. The long gallery, which runs right through one wing of the house, from a bay window on the front to another on the garden elevation, is one of the most noteworthy internal features, and is a fine and interesting room, with a pilastered order along the walls and a rich ceiling; it looks somewhat cramped however, narrow and low in proportion to its length, and must always have been very inadequately lighted as far as window-light is concerned. At present the house has electric light everywhere. It contains some fine furniture, textiles, and tapestries, and a good many other objects interesting from an artistic point of view or as curiosities. The idea as to the value of the collection of pictures contained in it has been, however, much exaggerated; many of the portraits are interesting historically; a few, but only a few, are of high artistic value, and there are various large copies of old masters, which are not even good copies. Externally the rich subdued tone of the old brickwork is delightful to the eye, and there is a peculiar picturesqueness about the *coup d'œil* of the front garden or entrance-court. A short distance off runs the Thames, the gleam of the water just caught between the stems of the great avenue of trees running parallel with the bank; the approach to the house is by a terrace separated from the river-meadow by a sunk fence, and in front of the centre of the house is a circular sweep paved with large flat slabs enclosing a lawn, in the centre of which reclines a figure of a river god. The combination of the old rather prim-looking house, with its stiffly-decorative front door, the formal old-fashioned laying-out of the court, the profusion of flowers, and the proximity of the trees and the river beyond the boundary, go to make up a picture full of charm, and which seems to transport the imagination completely out of the London world of to-day.

THE last issue of the Athenian *Mittheilungen* of the German Institute contains a paper by Dr. Bruno Sauer, which will be rather startling to archæologists. We had most of us settled down into the comfortable conviction that the curious archaic winged Niké, familiar in all Cast Museums, belonged to the basis near which it was found, which bears the name of the sculptor Archermos; in fact, "The Niké of Archermos" has passed into current archæological speech. Too soon, it seems, according to Dr. Sauer. He has made a study of the fragments of draped figures of which a portion at least of the plinth remains. The details of his argument cannot be followed without his illustrations, but the sum and substance is this. He finds it to be a rule, with no exception, that the space occupied by the lowest portion of the drapery in such figures corresponds with the size of the plinth. If we place the Niké on the Archermos basis, this correspondence is wanting. Dr. Sauer suggests that the basis, from its size, would best have supported not a kneeling (*i.e.*, in archaic art a flying) figure, but a crouching animal, and he conjectures that this was the heraldic Sphinx of Chios, the native place of Archermos. His position is sure to be contested. The paper deserves to be read, if only to remind us that the conjunction of statue and basis is *not* an ascertained fact, and we could point to at least one catalogue of casts where it is stated as such. So tempting is it to fit statues on to bases inscribed with famous names, and then to build up a history of ancient art in these dubious conjunctions that too great caution can scarcely be exercised. Our readers will remember that it was Dr. Sauer who recently gave us the valuable paper on the marks of attachment of the pediment sculptures of the Parthenon.

THE same number of the *Mittheilungen*, referred to above, contains an account of the important excavations recently carried on by Dr. Otto Kern and Dr. Humann in Magnesia. The ground plan of the temple of Artemis has been completely laid bare, and, moreover, sufficient remains of both columns and architrave have been found lying about in the immediate neighbourhood to allow of a reconstruction of the whole building. The temple, it will be remembered, is the one to which the Amazon frieze, now in the Louvre, belonged. It has, however, for architects another and a very special interest, because it is one of the temples noticed by Vitruvius. He notes that it was the first pseudo-dipteros. It was built by the architect Hermogenes, whose account of the building Vitruvius obviously had at hand. The excavations not only confirm Vitruvius, but make his statement for the first time fully intelligible. Up to the present time he has been taken to mean (I., 3, 8), that Hermogenes built a brand-new temple at Magnesia on the pseudo-dipteral plan. Moreover it now turns out that there was there originally a dipteros which Hermogenes turned into a pseudo-dipteros, leaving out the second inner row of columns. The foundation of this second row has been discovered under the pavement of the colonnade of the second temple. Three periods can be clearly made out,—1st, the old dipteros with Ionic columns of *poros* stone, the date of the fifth century B.C.; 2nd, the pseudo-dipteros built by Hermogenes (of white marble), also of the Ionic order, in the third century B.C.; 3rd, a further modification in Roman times by which the cella wall was adorned with a sculptured frieze, and the court of the temple had colonnades added to it, and was surrounded by a wall, part of which is still standing.

MAGNESIA has yielded also a theatre of considerable interest. This has been excavated by Herr F. Hiller von Gärtringen at his own expense. The temple was undertaken at the cost of the Archæological Institute and the Berlin Museum. The stage building, the approaches to the theatre, and the greater part of the orchestra have been laid bare. Here, again, three epochs are to be clearly distinguished,—an early Greek structure (about the eighth century B.C.), alterations made in Hellenic or Early Roman days, and a late Roman structure. The earliest stage building consists of four chambers lying side by side, just as in the recently-excavated theatre at Eretria. With this theatre the one in Magnesia has another remarkable feature in common, *i.e.*, the underground passage leading from the stage buildings to the centre of the orchestra. By means of this passage an actor could disappear suddenly from the orchestra or reappear as needed. Dr. Dörpfeld thinks that if we dig deep enough these underground passages (so useful for his theory) will be found in many theatres.

THE action of a majority of the London County Council at their last meeting, in deliberately blocking one scheme for London street improvement after another, in obedience to what can only be called a *doctrinaire* theory about the revisal of the system of rating for improvements, is a piece of stupidity which shows only too clearly how far the Council, from which so much was looked for, is declining into the paths of Vestrydom. It was to be a non-political body, and it is constantly introducing political considerations. It was to be a practical body to carry out urgently-needed improvements, and it is constantly wasting time in aimless discussions, and becoming a mere spouting-club for people who like to hear their own voices. It is to be hoped this will be borne in mind at the next election of members. Unless a great change is made, and the Council arrested on its downhill course to Bumbledom, we might as well have the Board of Works back again.

THE dispute at the Wharves,—like most troubles of this nature,—is unfortunately involving others besides the original disputants; the carmen and lightermen gradually joining the strike with a view to entirely "blocking" the offending Wharves. The strike is against a proposed reduction of wages, which takes the form of abolition of pay for meal-times, and may possibly have unusual importance attached to it as affording an opportunity for testing the value of the new Federation of Unions. This federation was only effected last week,—thirty-eight Unions, representing 450,000 members being embraced. In these contests with their employers, the men have far more faith in force than argument, and are evidently keeping steadily in view their motto of "Unity is Strength,"—the latter principle certainly being clearly recognised by employers also. The formation of this new federation, and the evident desire to practically test its power as speedily as convenient, throws some light upon the reception of the resolution relating to arbitration at the recent Trades Union Congress; and indicates a decided preference for an entirely different and less conciliatory method of settling disputes. The resolution alluded to,—to which it would seem difficult to take any exception,—was worded as follows: "That in connexion with the Labour Department of the Board of Trade, or as a new department of State, there shall be established a state Board of Arbitration, as follows: The arbitration board to consist of thirteen persons, six of whom should be selected by capitalists or employers, six to be elected by the workers through the agency of the trade and labour organisations, and these twelve to appoint a chairman." Notwithstanding that this resolution (which was moved by Mr. T. McCarthy) was ably supported by Mr. B. Tillett, it was rejected. That the labour leaders are fully alive to the possibilities of an indefinite prolongation and extension of the present struggle may be gathered from their utterances at the Sailors' and Firemen's Congress now in session at Essex Hall, Strand; Mr. Tom Mann, on Tuesday, going so far as to say that they were on the eve of a "terrible catastrophe," and needed "boldness, courage, dare-devildom, and caution."

MR. S. T. THACKER, in a recent letter to the *Times* on the carpenters' and joiners' strike in the metropolis, states some facts which those on strike would do well to consider. He points out that architects and engineers are doing as much as possible to substitute other materials for woodwork. He also states that joiners' work is being done in the country and abroad, and he exemplifies the tendency of things by reference to a large order for joiners' work having lately gone to Austria. Finally, he gives it, as his opinion, that when the strike is over, there will not be work for more than 60 per cent. of the men on strike. This result is probable, dearness or scarcity of labour at once causes employers to seek for means for doing without manual labour of the special kind. Strikes are useless when opposed to general economical laws. Moreover, a strike which goes on for months, conclusively shows that employers can do without the men on strike.

WE have received the second annual report of the New Streets Surveyor (Mr. W. Sykes) to the parish of Fulham. The report shows what an immense change is being made in this once rural district, which is rapidly becoming a new town. During the past year fifty-eight roads have been ordered to be paved under compulsory powers, and twenty-eight roads have been completed and ten others are in progress. Mr. Sykes has designed a special gully of stoneware made all in one piece, and bedded in 6 in. of concrete, for use in these roads, and the Vestry has decided "that in future stoneware gullies be used in lieu of brickwork in all new streets, in accordance with the plan prepared by the New Streets Surveyor." The question has been raised whether the Vestry should carry out the large amount of road-making which still remains to be done, by its own workmen, or by letting the work to contractors; but

this point is still undecided. The latter portion of the report is occupied with a consideration of the question of the merits of York paving as compared with the use of artificial stone, and the Surveyor has brought together some very useful information on the subject. He points out that one of the greatest disadvantages of York stone as a paving material is its unequal temper, which causes it to wear unevenly. Owing to its hardness indentations on its surface are often not thoroughly tooled out, and consequently stones are frequently sent out full of holes. York paving readily absorbs water, which must either percolate, and cause the areas adjoining to be very damp, or remain in the stone in an unhealthy condition; whilst its absorptive powers also render it liable to be disintegrated under the action of frost. The "crushing weight" of York stone is not so great as Victoria, Imperial, and other artificial paving-stones; it is not so long-lived as they, and it does not wear so evenly; whilst artificial stones have the additional advantage of being practically non-absorbent. "Artificial stone is 20 per cent. cheaper than York stone." On the other hand, if the artificial material is manufactured from inferior cement serious results follow; and it is far more slippery than York stone. The general tone of the report is in favour of the adoption of artificial stone, consequently it was decided to advertise in the future for tenders for that material. This, for obvious reasons, has led to the inconvenient system of having two contracts,—one for "road-making," and the other for "paving." We endorse nearly all that Mr. Sykes says in regard to the respective merits of average York stone, and the artificial stones mentioned; but it would have been more to the point had he given the names of the quarries from which the stones alluded to were obtained. It is true that experience has shown that the artificial is more durable than the ordinary natural stone, but we do not think that the time has yet arrived to enable us unhesitatingly to state that the usual kinds of artificial paving are, taking everything into consideration, better than the best varieties of York stone. As an essential character, pavements should be of such a nature as to yield a firm hold to the feet; as the report itself says:—"There can be nothing more objectionable or tiring to the body than to walk on a pavement where every muscle is taxed, and every sinew is brought into a state of tension for fear of sliding down." The fact that artificial paving is so slippery, in our opinion, outweighs its advantages in other respects, and in spite of its faults we rather incline to the use of York stone, or better still, Caithness, where the latter can be economically adopted.

AT the recent general meeting of the Mersey Railway Company, the Chairman called attention to the fact that this line was at length united with the general lines of the country by means of the junction at the new Rock Ferry station. There can be no doubt that this is an important step in the history of the railway communication of the north-west of England. Moreover, it is likely to make Rock Ferry an important residential suburb of Liverpool. There is now an excellent and convenient station, and it takes but twelve minutes from Liverpool to Rock Ferry. In other words, the residential district on the Cheshire side of the Mersey is now as convenient for men of business in Liverpool as the Lancashire side. The junction at Rock Ferry likewise brings parts of Cheshire at a greater distance into an actual contiguity with Liverpool as regards time. It is probable, therefore, that better days are in store for the shareholders in the Mersey Railway Company. But its progress has an interest to others than the shareholders: it is an important link in the railway system of England, which as yet is but imperfectly utilised.

THE stir that was made a few years ago about what was then called the "New York Broadway Steal," will be fresh in the minds of our readers. The New Yorkers soon found, however, that the projectors of the tram-line which was laid down Broadway as a result of the "steal," knew better what New York wanted than the mass of New Yorkers themselves. The latter have, apparently, been quite reconciled to having their boasted thoroughfare disfigured by trams, for now a cable road is being laid in the great street. Our American contemporary, *Engineering News*, gives some interesting particulars of the trouble that has been experienced in laying the cable trough. The description is graphic, and not without parallel in this country:—

> Included in the tangle under Broadway, and lapping over and intersecting each other through the centre of the street, are the main and branches of the Croton water system, the mains and branches of seven gas companies, the main cables of the Western Union Telegraph Company, and of the telephone, electric light, and steam-heating companies, the subway, and, from Twenty-third-street to Day-street, the pneumatic conduit of the Western Union Company. (This had to be rebuilt.) Some of the water-pipes were laid thirty years ago, and they cross the street from curb to curb in places. Some of the gas-mains are almost as old and irregular. Above Broadway and Thirty-fourth-street, the native rock comes up to the base of the paving-blocks, and the excavation of new trenches and the shifting of old pipes necessitated the use of steam drills and dynamite.

The engineer to the scheme, Mr. George McNulty, wished to construct a subway to take all these pipes and connexions, but this scheme fell through, as nearly all schemes to construct subways apparently do fall through. It is a barbarous thing to think that we bury our gas and water pipes, &c., in the earth, and no doubt some day we shall be driven to the subway system. At the present time we have the Southwark-street subway as an example; but out of the hundreds of miles of London streets there are only twelve miles which have subways. The length of the Broadway line will be just over five miles, and it is intended that this shall be a model line. Two miles are now finished, and it is said the entire line will be in operation some time next spring. This will do something towards improving the position of New York in the matter of street railways, a feature in which it has hitherto been a long way behind some other cities in America, such as Pittsburg, Boston and others. Of course, London is far worse off than New York in the matter of street locomotion,—excepting always with regard to cabs,—and this is the more to be regretted, as our underground railways are far inferior to the overhead railways of New York.

THE Society of Arts hold a sum of 400*l.*, the balance of the subscriptions to the Owen Jones Memorial Fund, presented to them by the Memorial Committee, on condition of their spending the interest thereof in prizes to "Students of the Schools of Art who in annual competition produce the best designs for household furniture, carpets, wall-papers and hangings, damasks, chintzes regulated by the principles laid down by Owen Jones." Accordingly it is announced that the next award will be in 1892, when six prizes will be offered for competition, each consisting of a bound copy of Owen Jones's "Principles of Design" with the Society's bronze medal. Owen Jones's book is a fine collection of chromolithographs of decorative work, and his essay on the principles of ornamental design was a great advance in its day; but one may feel a little alarm at the prospect of his work being thus stamped as a kind of perpetual authority on decorative design, if the Society intend yearly to present bound copies of it as prizes. They are doing a good work in offering annual prizes for furniture and textile design, but it might be well presently to invent some other form of prize than Owen Jones's book, which can hardly be accepted as for all time the guide in decorative design.

FROM some correspondence which has been forwarded to us it appears that in the case of the competition for the Port Talbot Intermediate Schools the Committee, after informing the architects intending to compete that a professional assessor would be appointed, revoked this decision at another meeting, without informing the competitors. The excuse given, in a letter to one of the competitors which has been forwarded to us, is that the decision to appoint an assessor was first come to in the absence of the Chairman of the Committee, "who is a professional Land Agent"; and at a subsequent meeting it appears that it was decided that, this being the case, and "other members having experience in plans," the appointment of an assessor was unnecessary. They had, no doubt, every right to come to this decision in the first instance, if they pleased; but they had no moral right to tell their competitors that they intended to have an architectural assessor and afterwards go back from their word; and committees ought to understand that competing architects do not accept a "professional land agent" who may happen to be on the committee as doing duty for an architectural assessor.

IN laying out the northern portion of Old-square, Lincoln's-inn, for, as it would seem, a garden-plot, the Benchers set an example that might well be followed by at least the three other Inns of Court. There are various gravelled, or flagged, spaces which, after leaving room for the necessary wheel or foot traffic, would admit of a similar conversion. The cost would not amount to very much, and the areas would look all the brighter, and be more cheerful, for the change. We have in mind more particularly the two squares at Gray's-inn, the large area of King's Bench-walk, Inner Temple, and some of the courts at both the Inner and Middle Temples.

THE *Sunderland Herald* publishes a paragraph, under the heading "An Architect's Grievance," protesting against the recommendation of the Local Government Act Committee to the Town Council, to limit the competition for the proposed lunatic asylum to architects who have had experience in designing lunatic asylums. One can understand the feeling under which this is done, and the desire on the part of the committee to avoid being troubled with useless plans; but it must be remembered on the other hand that an architect may have a special faculty or special knowledge on a subject without having had a previous opportunity of showing it; and that the repetition of a similar class of works by the same architect may only mean the repetition of plans not up to the latest standard of knowledge. Thoroughly unsuitable plans are easily picked out and got rid of on the first view of a set of competition drawings; and in limiting a competition to those who have previously erected buildings of the same kind, a competition committee may, for all they know, be shutting the best man for the occasion. Of course it is needless to add that, as a matter of logic, if the rule proposed by the Sunderland Committee were universally adopted, no architects could ever build lunatic asylums.

THE annual *conversazione* of the Architectural Association was held on the evening of October 2, at the Westminster Town Hall. Although entertainments of this kind vary but little in general arrangement, there was additional interest in the exhibition of drawings, due to the presence of the various designs for the completion of the South Kensington Museum, which had been kindly sent by the First Commissioner of H.M. Works and the competitors. The students' work submitted in competition for the prizes given by the Association was on view in one of the upper rooms, and prominent in one of these rooms were some photographs of works executed by the late J. D. Sedding, and also an excellent portrait. The Council Chamber was devoted to a *séance magique* by Mr. George Boyne, and in the large hall below the band of the Coldstream Guards gave selections of music during the evening. The large hall was elaborately decorated and furnished for the occasion by the following

firms: — Messrs. Woollams, Gillow, Pitman & Son, Jeffrey & Co., Hayward (a good frieze by Mr. E. Gwatkin was shown by this firm), Felix & Wayman, Bontor, Morris, Evans, Hindley & Sons, and W. de Morgan. Messrs. Strode supplied the fittings for the electric light obtained from the Westminster Electric Supply Corporation.

WE are glad to hear that it has been arranged that the library of the Institute of Architects should be open on Saturday afternoons until 6 p.m., instead of being closed at 2 p.m. as formerly. The new arrangement came into operation on Saturday last. This will no doubt be a boon to many readers who are more at liberty on Saturday afternoons than at other times.

IN reference to our remarks last week about a paragraph in *A. A. Notes*, the editor of that publication assures us that the statement we objected to was made in good faith, and in the belief that it was correct; an explanation which we are of course happy to accept. It is admitted that it was *not* correct, and that admission is all we desired.

OUR contemporary the *Admiralty Gazette* seems to be rather puzzled at the intrusion of architectural subjects into magazines for general reading. It gives enthusiastic praise to the October number of *Harper*, but complains of the continuance of the series of admirably-illustrated articles called "Glimpses of Western Architecture," which "really seem to us more suitable to such a journal as the *Builder*." (They are mistaken there, too; the articles are too popular in style for an architectural journal.) The *Admiralty Gazette* continues, "who cares to read of the 'fenestration of the gabled attic' of some obscure newspaper building in America? How different is the splendid sketch, illustrated by the author, of 'A Courier's Ride,' by F. D. Millet, the well-known war correspondent. It is a graphic account of an incident in the Russo-Turkish War." Just so: there is nothing like leather. The business of the *Admiralty Gazette* is with war and things appertaining thereto; such subjects must be interesting; but why *should* a magazine editor insert articles about architecture? It is too bad!

NEW DEPARTURES IN ARCHITECTURE.

THE opening lecture to the students in architecture and construction at University College, London, was delivered Oct. 5, 1891, by Professor T. Roger Smith who said:—

GENTLEMEN, — The subject that I have chosen for this evening,—"New Departures in Architecture,"—can be illustrated in more than one way, and, indeed, I propose to touch upon more than one side of it. As perhaps some of you may have anticipated, new departures in architectural education suggested the idea, and these, at any rate so far as they affect this college, will not fail to receive notice before I close. But the actual history of buildings and of those nations who have successfully practised building is wonderfully full of new departures, and it appeared to me that it would be more interesting, and more instructive, if we gave a few minutes attention to some of the important new departures, of which we can trace the effects in art, instead of spending our whole hour in the consideration of classes, examinations, and the other machinery of learning.

I am going, therefore, to ask you to glance at that part of the history of architecture in Europe which is best known to us, simply with the object of noticing how, from time to time, a new departure has been taken, and of seeing what an impulse has been given to activity thereby.

In the Western World nothing seems a stronger motive power than the desire for change,—for something new, and nowhere is this better illustrated than in European architecture. We might, perhaps, extend this remark beyond the limits of the Western World, but Oriental people seem to be less bitten with the constant search for the new in art. It comes to them sometimes, and when they are stirred up by changes introduced or forced upon them they, like ourselves, seem to receive a great impetus from a fresh departure; but they can go on for long periods doing very much the same thing without degenerating; and with one notable exception European examples will suffice for this evening. We shall see, if in the short time we have to spend together I can succeed in sketching a few typical instances, that the periods of activity in European architecture have also been the periods of change. Its periods of depression and stagnation have also been periods of monotony.

The story of European architecture should properly begin with that of Greece, but we must pass on, almost without pausing to consider that noble art; and yet the history of Greek architecture at its best is that of a period of swift and rapid development, culminating in a too brief time of the most remarkable refinement and completeness. But many of the new departures are not quite obvious ones, nor are they easily illustrated without a reference to a good many minute points, and we will, therefore, start from the fully-matured Greek architecture of the time of Pericles, without going further back, to consider out of what artistic materials it had been evolved.

Here we have a style of architecture severe, dignified, refined, using only square-headed openings, and depending chiefly upon the column, and an entablature carried by it for its architectural effects. The construction was extremely solid, and most minutely exact; accurate setting-out, such as has hardly ever been attempted elsewhere, was the rule. Most of the important buildings were of moderate size, erected in marble, enriched by the finest sculpture, and the refined perfection of their design and execution was their chief means of rousing the admiration of those who saw them. The ornaments were most graceful and exquisite, but not lavish; great pains were expended to produce even minute improvements, and a simple but impressive dignity was the character aimed at.

The decline of the Greek Republics,—the period of the successes of Alexander the Great and the diminution of the political and martial energy of Greece,—coincides with a time of comparative decadence in Greek architecture. The remains that have come to us from that time are not very impressive, or, in fact, very extensive. Much that was built has perished; but we know enough to know that in the many parts of Europe and even Asia, to which Greek architecture had more or less extended, it was very much less forcible, powerful, and complete than it had been in Athens and Corinth or even in Asia Minor at the best time. Indeed, the world, so far as architecture was concerned, was very ready for a new departure. In time, as you all know, the new departure occurred, and so energetic was it as to occasion perhaps the most complete change, and to give perhaps the most powerful impulse that architecture ever was affected by. I allude, of course, to the establishment of Imperial Rome, to the vast structures raised by the Roman power, first in the capital and then in all the great cities of the Empire, and to the novelties in construction as well as in design which we find to characterise the Roman buildings.

The change from Greek to Roman illustrates the truth that novelty, though always associated with activity, is not necessarily a guide to excellence. If you set out on a downward road yours is still a new departure. There are bad novelties as well as good ones. Roman art was inferior to Greek, and alas! it is no rare phenomenon to find that the human mind, sated with that which is excellent, takes a new departure, not in pursuit of that which is better, but only of that which is different; so that, if the search for novelty has sometimes led to vast developments, it has at other times ushered in a decadence, and even precipitated a decline. To some extent it was so in the case of the Roman developments of architecture.

The Roman nature was forcible, overbearing, fond of vastness, of magnificence, of the parade of power, and impatient of refinement. When, after having overcome every other civilised or semi-civilised people, the Romans turned to the embellishment of their city as one means of glorifying their own greatness, what they desired to do was to indulge in display. They had, so to speak, elbowed themselves to the front, and now they desired to enjoy the place they had won, and to make a free use of the boundless stolen wealth at their disposal. Such energy, such resources, have never in the history of the world been lavished upon building before or since, and Augustus, who boasted that he found Rome of brick and left her of marble, was the first to display this ostentatious passion. What was wanted was quickly to erect vast piles, and to adorn them lavishly; and the Roman architect developed two hitherto little-used constructive methods, and made them his chief auxiliaries. These methods, capable of doing so much, and not quite unknown before the Roman day, had not been pressed into the service of architecture, or at any rate of such European architecture as has left remains which have come down to our day. They were the use of the arch and the use of concrete. The possession of these means of rapid and ambitious construction enabled the Roman architect to perform surprising feats. His new departure starts from the arch and concrete, and was favoured by the command of material resources and wealth, of slave-labour, of marbles, metals, painting, sculpture, in unlimited profusion; and, in short, of the spoils of the whole civilised world, and was stimulated by the energy of the most powerful race known to history.

If you wish to know how vast and how novel were the structures raised in the few centuries of Roman Empire read the lectures delivered in recent years at the Royal Academy by Professor Aitchison. Nowhere has the picture of the profusion, the variety, and the splendour of Roman Imperial architecture been better drawn or more fully illustrated. The fact that any remains are still left in Rome after centuries of active destruction and plunder, and a thousand years of neglect and occasional demolition, is an astonishing tribute to the energy with which the Romans built, and to the vast mass of building work which they constructed.

Let us for a moment inquire how this new departure operated, and what there was about two such simple and (to us) familiar things as concrete and arches, which contributed to so grandiose a result as was actually attained.

First then consider the change involved in the general adoption of the arch. In the buildings of the Greeks, Egyptians, and Persians the openings had been spanned by lintols,—that is to say, horizontal beams of wood or blocks of stone or marble,—and as in all buildings pretending to a monumental character wood (as a material liable to be burnt and to decay) was not admissible, stone lintols formed the heads of doorways and windows, and spanned the distance from one column to another. The consequence of this was that no opening could be wider, and no columns further apart, than the length of such a stone lintol as could be trusted to go from column to column. Hence the scale of every part was restricted. With the arch the size of openings was almost unlimited, and the limit of the distance apart of columns or other supports was enormously increased. But this was not all. The arch led to the vault, and this gave the means of covering large interiors with a permanent roof. The Egyptian interiors had been, it is true, permanently roofed in stone, but at the expense of filling the space so roofed with a forest of massive columns. The Assyrian, Persian, and Greek interiors appear, from all that can be inferred, to have been roofed in timber, and, consequently, to have been open to the destruction that has actually overtaken every one of them. The Roman, however, making use of that continuous arch,—which we call a vault,—and of that admirable arched construction on a circular base which we know as the dome, was able to cover in his most vast interiors with a roof almost indestructible. His command of the arch also enabled him to support these vaults on a few massive piers, and thus grew up a series of grandiose structures which were of vast and noble forms, and which he ornamented with lavish decorations.

The use of concrete,—that is to say, of a masonry made of small materials a little coarser than our concrete,—enabled the Roman to construct both the vaults and the vast piers which supported them rapidly and comparatively cheaply, while it led him to substitute a superadded surface of stone or even plaster for the solid masonry of the finest Greek buildings. You can easily see how these modes of construction constituted a new departure, and, though they led to results to which we cannot give unreserved admiration, as the buildings were often deficient in refinement and grace, they undoubtedly were associated with a stu-

pendous display of energy. The imperial palaces, the thermæ, the endless porticoes and colonnades, the fora, the aqueducts, and the mansions of Rome formed a vast and sumptuous series of buildings.

It was not, however, in structure only that the Roman introduced change. His methods of decorative treatment, and in some cases his methods of dispensing with almost all that was decorative, and relying upon the outlines and the mass of his structure and the disposition of the openings in its walls for architectural effect were new. He made the Greek orders coarser and in every way less elegant, and he reduced them in many cases to the position of subordinate ornaments, but he used them with a lavishness and connected arches to them with a boldness that was astonishing, and opened a new chapter in the history of architectural design.

When the force of the Roman departure had fully spent itself a new force arose, and in Rome itself, but more emphatically in Constantinople, led to a notable new departure. I allude to the architecture that sprang up after the recognition of Christianity under Constantine, and his removal of the seat of empire from Rome to Constantinople. At and around Rome the influence of the religious motive power is to be seen at work in the establishment of that form of this architecture generally known by the name Romanesque. At Byzantium,—starting with the new name Constantinople,—combined religious and political forces resulted in that more original and very vigorous style which we know as Byzantine. Not unnaturally, the more pronounced the novelty the more brilliant was the result.

Both Byzantine and Romanesque grew out of Roman art, but each is widely divergent from the stem out of which it sprang.

At Byzantium many of the conditions of a new departure on a great scale were combined, for, in addition to a new religion, there was a new seat of empire, and a new mixture of races. Byzantium was largely a Greek city, and the combination of Roman energy with Greek skill and taste seems to stand out clearly in the architecture. Some of the early steps in the development of Byzantine art are lost to us, but the culminating point of what must have been a rapid course remains. In a surprisingly short time a building of great constructive and great artistic merit, and original in almost every respect, was reached. I refer to St. Sofia. Here the methods of the Roman architect were all known and followed, but not exactly followed. The new style displays an almost exclusive employment of the flat dome, usually lighted at the base, and carried on the domical corbels known as pendentives. The square plan, and the quality of the carving, mosaics, and other enrichments, are distinctive. It is easy to recognise that Roman architecture was the starting-point, but we find that an entirely new character has been acquired by the buildings, and that an original and a most admirable style has sprung up. I hope that it may yet prove that remains enough exist to show many more of the steps of this metamorphosis than have yet been traced; but whether that be so or not, St. Sofia presents one of the most brilliant examples known of the result of architectural development, and a development found exactly in that part of the world to which a specially powerful stimulus had been given by political and religious events.

As has again and again happened, after the stirring up of men's minds, which the circumstances of this new departure occasioned had subsided, they here fell into a very regular and unchangeable order; and Byzantine architecture has continued, without much modification or development, to prevail in those Eastern parts of Christendom where the Greek Church holds sway, even to the present day. In the West it has not been so.

The Romanesque division of Early-Christian art was not, as has been said, so strikingly original, and its development was long hindered by the invasions of the northern hordes which overran Europe. Later on, however, after it had become the universal style of all Western Europe, it met with influences which varied it, and in some countries, especially in Germany, it was carried to a high pitch of perfection.

Meantime, however, leaving out of notice in this hurried sketch other interesting forms of Christian architecture based on Roman, such, for example, as the one which is to be found in the ruined cities of Central Syria, we will, if you please, come down to the next prominent new departure in the art, one of extraordinary interest and splendour, but less familiarly under observation.

Arabia was the country in which a new religion and a new seat of empire rose with a marvellous rapidity, and from here the Mohammedan faith spread, till it gained a hold on half the Oriental nations of the globe, such as has not relaxed for more than a thousand years. It is true that we might almost have left Mohammedan architecture out, as not a European phenomenon, although it was ultimately brought into Spain by the Moors; but I could not well omit such a wonderful instance of a new departure, the more so that the original materials out of which the Moslem architects elaborated their style were, to a large extent, the lingering traditions of that Roman manner of building which had become practically universal, and, as we have just seen, had furnished the basis on which Christian architecture stood; and that the Mohammedan invention of the pointed arch reacted on Western Christendom at no very distant date.

Some, at least, of the peculiar beauties of the buildings of the followers of the Prophet seem due to an innate faculty for designing and executing decoration, which the Arabs, the Egyptians, and the Persians appear to possess. At any rate, this was stimulated and drawn out by the extraordinary impulse given by Moslem conquests and Moslem conversions to the nations where mosques first began to be built. No phenomenon in history is more startling, and nowhere is a more brilliant and more astonishing display of energy met with. A new departure could hardly be more completely made than was made by the followers of the Prophet, and a more complete re-casting of known features into new forms, and a more remarkable creation of new ornaments and original decorations has never shown itself on the civilised globe. The dome, the pendentive, the arch, the column, the rough construction encased in plaster, are all derived from Roman methods; but in no case do they look like the same things as in Roman buildings. The arches are pointed or ogival, the domes are often pointed, the pendentives are masked, the openings are filled with tracery and coloured glass, and the methods of clothing the rough structure with ornament are very dissimilar; while the surface decorations, the pierced stone and metal panels, the wooden grilles, the tiles, the inlays, the mosaics, the coloured and gilded plaster stalactite work, the nook shafts with their capitals,—these all are new and charming creations, as original as they are beautiful.

The next new departure in point of time is one which affects Western architecture, and which got its impetus largely, though not exclusively, from the indignation roused in Western Europe by the progress of Islam, yet drew its chief feature from the East. The first Crusaders came back, having seen the Arab buildings in which the pointed arch was in use, at a moment when the architects of the West were much in need of some such feature. Jerusalem was in the hands of the followers of the Prophet, and the Crusades undertaken to rescue the Holy Sepulchre from this profanation were embarked upon by all Christendom with a zeal which was partly religious, partly fanatical, but all-absorbing, and which roused Europe to the most extraordinary pitch of excitement. The Crusades were, however, not the only outcome of the religious zeal of the eleventh and twelfth centuries,—though they not only were the most conspicuous development in which it showed itself, but also served to re-act upon it, and keep it alive. From various causes the founding of religious establishments, or the re-casting of them on larger lines where they already existed, began to be one of the chief occupations of European energy soon after the year 1,000, and this work, in various phases, continued for from four to five centuries; a long period of activity compared to almost any other architectural period.

We in England have admirable opportunities of observing the whole development of this interesting time, and nothing is more surprising than to note, as one compares the buildings of one part of this period with others a little earlier or a little later, how continually the architects were taking a new departure, and what scant care they mostly had for the work that lay behind them, so long as they could do something different in what was in hand at the moment. They forgot, perhaps, that the generation to follow, or even in some cases they themselves, would turn an indifferent eye upon what at the moment seemed so new and so good in the excitement of a fresh modification, or a new idea.

Leaving the larger field of European art, let us, now that the subject can be illustrated by examples well within our own reach, consider the successive phases through which English art went during this time.

We possess still a few scattered examples of that phase of primitive Romanesque which we generally call Saxon. England, as you know, though the fact is often forgotten, England as she is at the present day, is the most startling tribute to the value of Christian missions to the heathen that the world can exhibit. The results of the missions which planted Christianity in this country at an early date are to-day of incalculable and growing magnitude. Even in the far off times before the Norman Conquest, there were many churches and monastries scattered all over Great Britain; but the country was very poor,—in many cases these buildings were of timber, or timber and reeds. Even where they were of more solid materials, they were usually small, rude, and inconvenient, and in nearly all cases they have been superseded. Remnants, however, linger sufficient to give an idea of what was being done.

Suddenly, the Norman Conqueror appears on the scene. This country is taken possession of by strangers, who seize upon its resources, whatever they were, and turn them to their own profit. In a comparatively short space of time, Norman castles began to make their appearance, and in almost every parish in England a church is built or rebuilt, and in many of the leading cities a cathedral. It is perfectly startling to find how great the building activity of the period following the Conquest was; and it is in accordance with the principle which I am bringing under your notice, that this new departure resulted in an architectural development of great energy, if of varied excellence. The earliest buildings resemble those which were at the same time being erected on the other side the channel in Normandy, from whence the invaders had come; but very soon indeed peculiarities begin to develop themselves, and Anglo-Norman became a distinct and well-marked architectural style with an extremely pronounced character, and beauties all its own. In very few cases does an important Norman building survive unaltered, but such a cathedral as Durham will serve as an illustration of what many of our great churches were at the moment of the fullest development of the style.

At the end of the twelfth century the churches that were built were large in plan. When circumstances allowed they were grandiose. The religious establishments were planned with great completeness, and often of vast extent. The castles, on the other hand, had not yet become, as a rule, extensive,—they were still mostly isolated towns,—very strong, but without outbuildings.

In a church the piers were large, often heavy, the arches semi-circular, the vaulting groined, as the Romans had formed it, but almost always confined to very moderate spans. The carving was barbarous, but rich and distinctive features, such as the chevron or the bird's beak, though admitting endless modifications, were not departed from. The masonry, of very regular execution outside, was often but a skin to cover a large mass of rubbish very poorly put together, and the enormous mass of the piers and walls being obtained in this way, gives an air of overwhelming strength, which the behaviour of the buildings under the test of time and weather has not always borne out.

From the time when the pointed arch came in, the architectural history of our country, and of France, and to a large extent that of other countries, affords a series of new departures of the most interesting and pleasing kind. What we are accustomed to call Early English Decorated and Perpendicular, are phases through which Mediæval architecture passed under a stimulus which lasted for more than three centuries after the introduction of the pointed arch. Of course, many causes concurred to keep up the great building zeal of the Middle Ages; but that zeal in itself is not sufficient to account for the eagerness and skill with which new forms, new mouldings, new enrichments, and new vaults were elaborated, each one rising out of the one immediately preceding it, and taking its place, and for the rush after novelty kept up so long; and I think what may, perhaps, be called the

artistic impulse came more from the sudden introduction into architecture of a new and unthought-of feature than from any other definite cause.

It is worth remark that here again, so far as one can form an impartial judgment, the pursuit of change did not by any means always mean the attainment of growth. Early English was, on the whole, a finer style than either of those that followed it, and I think most judges would also admit that Decorated was finer than Perpendicular. What was secured was vitality and change, not necessarily advance. Did time permit I should like to pursue this idea further; but I leave it to you as one worth your thoughtful study.

We come now to the remarkable influence out of which has grown the modern world, and to which we generally apply a French name,—the *Rénaissance*. Here, if anywhere, we have a new departure, wide-spreading, far-reaching, full of energy, affecting not only the arts, but literature, science, religion, and politics. That side of it which presents itself to our notice to-night consists of a return to the forms of Classic art in painting, sculpture, and architecture, begun in Italy and spreading through all Europe. In the sister arts, as in literature, this return soon formed a fresh starting point, and modern painting, and not a little of modern sculpture, has followed orginal lines of development which have led to the establishment of European schools,—schools which, on the whole, have reflected more or less faithfully the varying changes of modern thought and culture. Architecture has been less fortunate, and it is difficult to say why. The fact, however, remains that from the sixteenth century to the nineteenth we have done nothing but revive past styles. From time to time brilliant results have been obtained by mixtures of styles. What, in a very different parlance, is termed a "blend" has more than once not only produced good buildings, but appeared to be likely to originate a style of modern architecture, but it does not seem to take hold, and Europe has gone on erecting buildings for all sorts of modern purposes, and sometimes with the greatest originality in their adaptation to their purpose, but all clothed in the dress of some by-gone style. I am, of course, speaking broadly, and I do not wish to detract from the many excellencies of much modern work, but it is to be heartily wished that there was more of it which one could not so readily refer to some original. In our own country, for example, we have had a recent Queen Anne revival; that is to say, a revival of Dutch architecture as originally introduced by William of Orange. Previous to that we had a Gothic revival, beginning with Tudor and working more or less steadily back. Before that, the revival of matured Italian had filled Pall Mall with the club-houses; a little further back was the Greek revival; and previous to that the Palladian one, and so on.

And yet, while all this has been going on, events have occurred which have constituted a new departure, of which Great Britain has served as the starting-point. Steam by land and by sea, telegraphs, cheap literature, and all the circumstances of our new day have caused a rapid accumulation of wealth, and occasioned numberless fresh needs which have stimulated building to a remarkable extent, yet have left architecture very little affected. The modern mind has been more influenced by the vast strides which science has made than by anything else, and we, perhaps, ought not to be too much astonished that our vast systems of railway constructions exhibit consummate skill, and but meagre art, though it is, none the less a matter for regret that it should be so.

After all, perhaps, we are not without indications that something like a new departure in architecture is possible,—that a twentieth-century style may exist. If you look at representations of the best buildings in America you see works largely bearing the impress of one man's genius, but which are original as well as excellent, which all hang together by a certain resemblance to a type, and yet possess individuality, character, and what the French call *cachet*. If a modern style of architecture is to arise at all, America is a country which seems to offer a very likely field for it to grow in. The country is a new one, the people are fresh, they aim at cultivation, but also at originality; they are able to dispose of great wealth; and their architects are men of very high culture indeed. If to these conditions we add a climate different from that of Europe, and which would consequently make it undesirable to transplant European buildings to America, we have a combination from which I confess I both hope and expect great things.

A second example of something like a new style of architecture has been lately seen by many of us in Paris, where new materials have been employed under new conditions and with very striking results by our artistic neighbours the French in their great exhibition buildings.

The conditions of an International Exhibition were met by us in 1851 by a temporary structure exhibiting very great ingenuity, and in which the qualities of glass and cast-iron were turned to good account; but, unfortunately, though the thing was a novelty it was only an expedient of the cheapest sort after all, and did not advance architecture. The French, in their exhibitions, have always been more ambitious, and I think many of those who have seen the buildings erected for the 1890 exhibition and still standing, will feel that the architect, making the utmost use of the structural properties of iron and of the decorative qualities of ceramic slabs and tiles, metals, and other things which go with his construction, has gone far to establish a scheme of building quite entitled to be called architecture, and partaking of the dignity, and solidity, and stability which we look for in architectural works, and unquestionably novel.

We ask in some anxiety whether we have any parallel to all this in our own country? and, if so, where are we to look for it? I think we may find such a parallel, though in a series of buildings not so ostentatious or colossal as those for the Paris Exhibition. There are not a few virtually new materials, and new combinations of materials, now in use in England, and there are undoubtedly many new situations, or new developments and extensions of old ones. Iron, concrete, terra-cotta, faïence, encaustic tile, as we know them at the present day, are practically new materials, and some of them,—like iron and concrete,—are equal to two different materials, each, or even more than two, according as they are manufactured.

It appears to me that in the employment of appliances which science has put within the reach of our constructors for such modern purposes as suggest, nay, demand, artistic treatment, we have the nearest approach to a new departure which has shown itself yet, and that here, if anywhere, we have a prospect that the twentieth century may perhaps attain a definite English style of its own. The most successful architect of the period now drawing to a close has been unquestionably the foremost to employ new inventions, or at least to give them a chance, and to him we owe it that the English people had an opportunity of seeing on a great scale, in the Natural History Museum, what wide architectural possibilities the employment of terra-cotta could introduce; and, certainly, the most original buildings of the present day, and the most original designs for great buildings about to be erected, seem to be based, as far as their structural peculiarities go, on the use of iron, and in respect of these artistic qualities on the free employmentof terra-cotta. Here, I venture to suggest, is a chance for the architects of the coming generation.

At any rate, I would very strongly urge on the gentlemen forming the audience who have their career as architects before them, that if a new departure comes in your time you are safer to go along with it than to stand aloof. It may, I admit, lead you astray, but as matters are at the present day it is far more likely to lead you ahead, and to offer the best chance of doing good and original artistic work.

If then you, or some of you, are to work at the evolution of a new English architecture,—original and good,—and having for its starting point the new or improved methods of construction, and the new and improved materials in use, or likely to come into use, it is almost self-evident that you must master the science of construction and the art of architecture, or you will not be prepared for the task.

Let me point to an example which shows that sometimes the changes from which a new departure may take its start may come suddenly. At the present moment the carpenters of London are on strike, and it seems clear that in important buildings iron will have to be substituted for carpentery in the roofs. How many architects are prepared at once to deal with the structural difficulty and to design appropriate and architectural iron framework for the roofing which was to have been in timber? I do not know what answer ought to be given to that question, but it will, I think, be clear to you all that it is only those who nnderstood how an iron roof is framed who would have any chance of being able to make such a change in their building lead to a good artistic result. If a man has not sufficient mastery of his roof to know how to make it structurally sound how is it possible for him to make it architecturally good? On the ground, therefore, of being fully prepared, not only for the present course of practice but for possible changes, it seems to be more than ever desirable for architectural training to be thorough, and I think the opportunities for scientific education, concurrently with the architectural and structural classes which have been arranged for in this college, are eminently calculated to afford the means of such a training.

We have taken, in respect of professional matters, a new departure which has led to a considerable change in our internal economy as a profession. The Institute of Architects has obtained a new charter. Associates are for the future only to be admitted after examination, and two examinations for students are set up. All students who aspire to take a good position in this profession will desire to pass these examinations, and thus the point of view from which they regard their present position and opportunities will be considerably altered. This may, or may not, be an unmixed good, for a new departure,—let me say it once more,—is not certain to bring improvement. All that is certain is change. It devolves upon us all, then, to do our best to make the change advantageous.

You will, many of you, be desirous of passing the examination. I hope that you will all be even more desirous to fit yourselves for the practice of your profession. It is not quite the same thing. It is possible to pass an examination partly by cram and partly by luck, without being by any means well educated, but at the same time my honest feeling is that the men who fairly and studiously master the subjects in which the examinations are held, and who pass as the result of study of that sort, have done very much indeed to fit themselves for the practice of our profession.

Now, towards that sort of preparation this college is now able to offer facilities which have not been available before. I have always wished for a means of supplementing such instruction as is given in the class-room by instruction at the drawing-desk, and now the liberality of one of the City companies,—the Carpenters' Company,—has provided a fund out of which the necessary expense of a teacher of drawing can be met, and we are to have a class for architectural drawing, not excluding construction on the one hand, and perspective on the other, which will meet two afternoons in the week, with the class-room open on other afternoons for practice. I hope some architects may spare their pupils on these afternoons to come and be systematically taught. I especially hope that students who are preparing for the Intermediate Examination, and who consequently have a series of careful drawings to prepare as testimonies of study, will some of them come and prepare them under the careful eye of Mr. Stirling, who has undertaken to conduct this class, and who will co-operate with me and with Mr. Elsey Smith in the direction of it. And I venture to suggest, though with some diffidence, that some young architects recently started, and who have the command of part of their time, might find it pleasant and advantageous to come and work two afternoons a week at work which would improve and strengthen their powers as designers. I hope also that some students who are not yet articled to an architect, but intend to be so, may be found who will spend a session at the college, for a course has been arranged, and what is called a "composition-ticket" will be issued, covering such classes as will in the most profitable way fill up their time. This, supposing the student to be sufficiently grounded in mathematics, would cover graphics and graphical drawing, part of the courses of engineering, mechanics and physics, economic geology, the technology of building materials, surveying, and levelling; in addition to architecture, construction, architectural drawing, and applied art.

The Carpenters' Company has also enabled us to establish a night-class for building construction, to be taught partly by way of lectures and partly by drawing, and this probably appeals to a rather different class of

students. We hope to deal with the principal subjects of the examinations in construction held by the Science and Art Department, and to consider them in as practical a way as possible, so that the members of this class may find themselves able to draw plain,—and perhaps difficult,—construction clearly and intelligibly. Please notice that these classes begin on Tuesday, the 13th inst., and meet every Tuesday and Thursday.

Of course, the two classes which for so many years have been conducted here will continue as before,—the class for the study of architecture as an art, and that for the study of materials and construction. The class for practice is also in the programme, but it will not be held (as in former years it has) in the first term.

These steps are not taken with a view to oppose the scheme of the Architectural Association, to which I wish all the success it merits, but they direct themselves to rather a different class of students, and I believe in London, with its large numbers, there is room for many organisations to work harmoniously.

There are always a certain number of students who have command of their own time in the daytime,—that is to say, who for the time being are not doing office work,—and these, I think, will find the afternoon drawing class and the entire scientific course to which I have alluded suit their requirements. Students coming from the colonies and from the country, as well as London students, will, I hope, find this to be the case.

I also hope that some of my brother architects who take pupils may, as has been suggested, find it possible to send them to the college to be taught drawing. I have known several instances in which men of standing who took pupils were so impressed with the desirability of definite teaching of draughtsmanship, and of architectural forms and details, and so forth, that they engaged a competent instructor to come and give lessons to their pupils. I believe the late Sir Gilbert Scott at one time did so. What we offer at the college is this kind of instruction adapted to the needs of pupils, only those who are to enjoy it must come to the teacher instead of his coming to them.

There is, however, another class of youth for whom I have always felt that provision should very often be made. I mean he who has just left school, who has devoted himself to architecture or been advised to do so, and who has not yet embarked on the occupations which await him in an architect's office. He has in some respects been prepared for the profession, in others not; but in addition to the need of some special studies and of a training in drawing, he has to learn the management of his own time, and the art of taking some care of his own education. A college session of the sort which has been sketched out affords the best possible half-way house between the organised regularity of a great school where the employment of every hour of the day is mapped out, and the entire freedom from all guidance as to his use of his leisure, which a pupil in an office oftener than not steps into; not to mention the fact that, to begin his pupil career with some skill in draughtsmanship, and some knowledge of the scientific subjects that bear on the profession, as well as some knowledge of architecture, will be of extreme service to him, both at the outset in aiding him to pass the entrance examination at the Institute, and throughout his whole student course.

You will notice that whatever new departure I advocate as to instruction, I do not suggest the idea that a practical profession like ours can be efficiently learned without such opportunities of seeing and taking part in practice as pupils enjoy, and as, so far as I can at present see, no other system than pupilage is likely to afford; and I am the more desirous to emphasise this, because at one time I held a rather different view, and the conclusion which I here advance is one which has been impressed upon me by experience. I know that in the medical profession if has been possible, and has been found of advantage, to do away with pupilage, but that is only because fuller opportunities of seeing practice and taking part in it are afforded in the hospitals than were open to pupils in the practice of the medical men to whom they articled.

To return for a moment to the evening class for building construction and structural drawing. I hope we may teach those who attend to understand how buildings are put together, and to make drawings to show clearly and legibly the nature of ordinary and, to some extent, of difficult structures. There are, of course, two ways of drawing construction,—one is to enlarge, or copy, or reduce another drawing or an engraving in a book; the other is, from a knowledge of the thing to be drawn to represent it as it ought to be. Copying may or may not be instructive. It is difficult to copy a drawing without learning something, but it is possible to do it without learning much if it is done perfunctorily or blindly. But if a man is working from his knowledge of a piece of construction or from a description and sketches, and is putting that upon paper without having an exact original to reproduce, he is doing what is much more like the actual making of working drawings in the business of the construction, and he can hardly fail to extend his knowledge and to make it precise and exact.

To all engaged in architectural work a mastery of the pencil is more necessary than any other accomplishment or attainment. With the pencil chiefly we preserve our notes of what we learn. Whether it be architectural detail or construction, or both at once, we study them on existing buildings by means of the pencil; and a sketching tour is at once the most pleasurable and most profitable part of a student's or an architect's time. Again, it is pencil in hand that designs are made and structures contrived, and few, indeed, would be able to design even a simple piece of work had it to be thought out without the constant aid of the pencil, and, let me add, of the india-rubber. Once more, when the architect's own ideas are fixed, the design, be it simple or be it complex, must be drawn fairly if any one else is to form an idea of what it will be like. It must be drawn out for the inspection of clients, and of any authorities who may have a share in deciding how a structure is to be built; and, last, but by no means least, the whole thing is to be, so to speak, built upon paper for the guidance of the surveyors who estimate what it will cost, and of the builders and operatives who actually carry it out.

Of course, for simple works the requisite drawings need only be simple, in more complicated ones they will require to be anything but simple; but do not forget that as matters stand at the present day a mastery of the pencil, in other words good power of drawing, is essential to every architectural student. I think I may go further and say that to have a prospect of success as an architect, and of rising at all in a profession where the competition is keen, a man must be not only a good but an excellent draughtsman. It is possible to be an excellent draughtsman and a bad architect, but in the present day it is not possible, I think, to be an architect without being a draughtsman.

It has not always been the case that facile and finished draughtsmanship was required of the architect, but I believe the circumstances of the present age render it essential, and I accordingly press drawing upon your attention as a matter of the utmost importance. There is much that has to be known, a good deal that ought to be seen, and not a little that should be read. But the things that require to be drawn and the method of drawing them are of paramount importance, and make a claim on your attention that nothing should surpass.

I am quite aware that in thus urging the importance of drawing I am not saying anything new,—not attempting a new departure,—for all that I have said has been true for a generation past, and has been repeated again and again from the lips of men entitled to be heard with respect. But yet the topic of my lecture comes up in another shape, and in fact, in the shape which first suggested "a new departure" as the subject of this lecture, for an architectural drawing class is in this college a new departure. It has for long been my desire to see the way to attempt it, and now that the Carpenters' Company has rendered the attempt possible it will be my most anxious desire that the class shall be furnished with students, and that the students shall gain the utmost possible benefit from the class.

Sale of Building Plots, Leigh "on Sea."—A sale of building lots at this place, which has been recently referred to by a correspondent in our columns, was conducted by Messrs. Protheroe & Morris on Tuesday last under a marquee on the estate, and attracted upwards of 400 visitors. The "West Cliff Building Estate" adjoins the town of Leigh and the railway station, and is two miles from Southend. The hotel plot realised 250*l.*; plots in Lime-avenue from 18*l.* to 30*l.*; on the main London road from 23*l.* to 27*l.*

MAGAZINES AND REVIEWS.

Mr. E. Hulme's article in the *Art Journal* on "Inscriptions as an Element of Design" is very short, far too short for a subject of such interest and importance, but it will be useful if it calls attention to the important effect which the mere arrangement of an inscription may have on decoration. At present the idea of treating an inscription decoratively is almost lost to the popular mind, and is regarded only as the amusement of a few artists and architects. The same number contains an article by Mr. Lionel Robinson on the works of Mr. Hitchcock, the French-American artist whose "Tulip-culture" attracted attention in a recent Royal Academy exhibition, but who has done better things than that; and an article on Mr. Geo. Scharf, one of the series on the Chiefs of our National Museums, by Mr. J. F. Boyes. An illustrated article on "The Sounds of New Zealand" (not the audible sounds but the inlets in the coast) gives a vivid idea of the beauty to be found in that far-off settlement.

The *Magazine of Art* has an article on Mr. David Murray with illustrations of some of his landscapes, by Mr. Walter Armstrong; and one on "The Sculpture of the Year," by Mr. Claude Phillips, with illustrations from Royal Academy and Salon Sculpture.

The *Gazette des Beaux-Arts* contains the second instalment of a series of articles on "L'Art Gothique" by M. de Fourcaud, dealing this time with the architecture of the twelfth and early thirteenth centuries. M. Paul Lefort writes on Ribot, with some sketches illustrative of his work. His remark that French art has lost in him, as regards technique, its most conscientious and able craftsman (*ouvrier*), is surely rather overstating the case. The most important and finely illustrated article in the number is that by M. Eugene Muntz on the Tuornaboni tomb. M. T. Wyzewa continues his very adulatory study of the works of Sir Thomas Lawrence, about whom French art critics seem to have taken rather a craze lately.

The *Revue Scientifique* contains an article descriptive of the French Exhibition at Moscow, by M. Moreau, and one on "Relations entre l'électricité et la matière" by M. Badoureau.

In the *Antiquary* Mr. Haverfield's article on "Roman Remains in Local Museums" commences a series which, if continued as begun, will be of considerable use in putting on record information as to the contents of various museums in regard to Roman work. Other articles in the present number are "Ancient Remains Around Conway," by the late H. H. Lines; "Holy Wells; their Legends and Superstitions," by R. C. Hope, &c.

The *Westminster Review* gives one of those articles on architecture which rather rarely find their way into English literary periodicals; it is on "Gothic Architecture," by Mr. Barr Ferree, and is well written on the whole, but contains nothing new or of special interest. The writer's estimate of the value of Mr. Moore's work on "The Character and Development of Gothic Architecture" is absurdly exaggerated, and his statement that "in no country has Gothic art been more misunderstood and misrepresented than in England" only shows his own ignorance of the matter. Mr. Ferree seems to imagine that Fergusson's views on Gothic represent those of English architects and writers on architecture generally! We presume he is an American; we can hardly imagine that any Englishman writing about Gothic architecture could be so ill-informed.

In *Scribner* the series of articles on "The Great Streets of the World," by Mr. W. W. Story, deals this time with the Corso of Rome, with illustrations by Ettore Tito. There is a good sketch of the entrance of the Palazzo Sciarra, but generally the article and illustrations are concerned with the population rather than the architecture. *Harper* contains an unusual amount of matter of artistic and architectural interest; "Cairo in 1890" by Constance F. Woolson, with a number of illustrations of buildings and types of natives; "The Art Students League of New York" by Dr. T. C. Van Dyke (the modern American transformation, we presume, of a great old Dutch artistic name), very interesting and admirably illustrated; and one on "Glimpses of Western Architecture" by Mr. Montgomery Schuyler, illustrated by some admirable pen sketches of buildings at St. Paul and Minneapolis, which illustrate the vitality and originality of much of the modern architecture of those cities.

In the *Century* Mr. Hiram S. Maxim gives an

account, with illustrations, of his experiments in the construction of a machine for "Aerial navigation," in which he expects to succeed, and which, with the illustrations, is at all events interesting enough. His principle seems to be the employment of a large thin float or "aero-plane" with a small screw propeller attached beneath, the sustaining of which in the air would be, we imagine, on the same principle on which a bird slides through the air with wings extended, or a man swims on the water by the extended action of arms and legs. Theoretically, the difficulty would seem to lie in the starting and stopping, the former especially. Mr. Maxim has been experimenting with an aero-plane at the end of a long arm moving freely on a centre post, with a circumferential flight of 200 feet. It will be interesting to know further results. The "aeroplane" would be, one would think, an awkward thing to manage in a high wind. Mr. R. Lemly, in the same magazine, gives under the title, "Who was El Dorado?" an article on ancient Mexican art, with a number of illustrations from objects from a private collection, some of which have a curious resemblance to Celtic work. Mr. W. J. Stillman continues some articles on "Italian Old Masters," treating in this number of Lorenzo de Credi and Perugino; and an article on "Last Days in Siberia" is accompanied by one or two sketches of architecture in that out of the way part of the world, "A Street in Minnisinsk," &c., which will be of interest to architectural readers.

The *English Illustrated Magazine* has an article on Rugby illustrated by some sketches of picturesque corners of the school and one or two old bits that have now disappeared, and another on "Boston, the capital of the Fens," with sketches by Mr. Harold Oakley; but the central article of the number is that on "Broad Gauge Engines" by Mr. A. H. Malan, giving a description and illustrations of some of these giants of the railroad which are shortly to disappear, and also a very graphic account of a ride on one of them in front of a Great Western Express train. Mr. Malan evidently shares our feeling of regret at the final abandonment of the broad gauge track.

One article by Mr. Sidney J. Low, in the *Contemporary Review*, on "The Rise of the Suburbs" should be read by Londoners. We quote the following sketch of the future of London in view of the increasing development of the suburbs:—

"Pile after pile of offices, streets of warehouses, boulevards lined with shops and stores, theatres, public buildings, libraries, museums, great factories, innumerable workshops will occupy the central area. The people of London will dwell outside in 'urban sanitary districts,' straggling far down into the depths of the home counties, in settlements dotted among the Kentish hop-gardens or on the Surrey moors, in small country towns which will have been annexed, as Kingston and Twickenham have been annexed already, in residential encampments which will spring up all over the south and east of England right down to the Channel and the North Sea. Not one but a dozen Croydons will form a circle of forts round the central stronghold."

And this, the writer observes, will go on elsewhere, is going on elsewhere, in the larger provincial towns. Mr. Low asks if, since it seems inevitable, it were not wiser to help on the movement by increased facilities for locomotion than to go on crowding artisans' dwellings into town blocks. The suburban dweller, Mr. Low thinks, will not be without some of the advantages of a rural neighbourhood; and if the sportsman does not develop in the conditions of suburban life, the athlete may and does.

In *Tinsley's Magazine* there appears an article bringing a very round fire of criticism against the trustees of the Chantrey bequest, observing that it is "a national scandal that so bad a picture" as the St. Elizabeth "should have been acquired from a fund left to the nation for the encouragement of art." The article is signed "Stylus." His expressions are rather strong, but he will find a good many people to agree with him. It is impossible to suppose that Chantrey would have been satisfied at the way his fund has been administered.

Completion of St. Catherine's Church, Canton.—We understand that the completion of St. Catherine's Church, Canton, including a large chancel and choir, south chancel, aisle, organ chamber, and vestries, is about to be commenced, plans having been approved of and tenders received. The architects are Messrs. Kempson & Fowler, Llandaff.

Illustrations.

DESIGNS BY THE LATE JOHN D. SEDDING (WITH PORTRAIT).

We have devoted the illustrations in the present number to the commemoration of the late John D. Sedding, whose unexpected death, on April 7 last, was so much lamented by all who knew him, as well as by many who only knew him by his work. An article on Sedding's artistic and personal characteristics, by Mr. W. R. Lethaby, will be found in another column.

Of the designs which we have been able to select and reproduce as examples of Sedding's work the most important is the lithograph from the large and elaborate drawing for the restoration of the great screen at Winchester Cathedral. This drawing occupied a prominent position in the architectural room at the Royal Academy some years ago, and Sedding had a great regard for it as one of the most important of his drawings, representing a piece of restoration work into which he had entered with great interest. Under what circumstances and for what motives the work on which he had been consulted and to which he had given so much study was not allowed to be carried out by him we are not aware: it is fortunate that we have at all events his design for it.

The "Sketch Design for a Decorated Altar in electrotype or beaten metal" is a reproduction from a large cartoon exhibited at the "Arts and Crafts" exhibition, an example of that tendency towards the use of beaten metal on a large scale, in decorative or pictorial design, which is one of the characteristics of the present day. It represents, in fact, a metal bas-relief in very low relief, combining the bright decorative effect of metal with the artistic expression of bas-relief. In a decorative sense the design, in the composition and the treatment of the trees, is evidently more or less suggested by Mr. Burne Jones's work; the figures, however, are of a different and more robust type. The design is a good illustration of the feeling which Sedding brought into ecclesiastical decorative work; a feeling, as observed by Mr. Lethaby, quite distinct from the archæological character which is seen in so much church decoration of the day.

The illustrations of the Chancel-Screen for St. Mary's Stamford and the Proposed New Church at Ealing are from drawings which were hung in the architectural room at this year's Royal Academy. In the chancel-screen his originality of feeling is shown again in the treatment of the figures seated above the main cornice of the screen and with a background of tracery of a Perpendicular character, and his freedom from convention and mere orthodox correctness is shown in the free and independent treatment of the cresting and ornament above the upper cornice, which is rather Renaissance than Gothic in style, and yet seems quite to harmonise with the work below. On the originality of treatment of the tower for the proposed Ealing church we commented when reviewing the drawings in the Royal Academy in a former number.

The sketch for the Credence Table for Holy Trinity Church, Chelsea, is reproduced from one of the rapid watercolour-sketches in which Sedding used to make out his first idea for a design for a piece of church furniture or decoration. The original drawing is very slight in execution, and evidently very rapidly done, but it completely conveys the general effect intended.

The portrait, from a recent photograph by Mr. Mendelssohn, the well-known photographer, is an admirable likeness; it cannot convey to those who did not know Sedding the charm of his bright, kindly, enthusiastic manner and expression, but will we hope be of interest to some of his friends among our readers.

Episcopal Church, Dunfermline.—The consecration of Holy Trinity Episcopal Church, Dunfermline, took place on the 24th ult. The church, which is situated in Viewfield-place, has been built according to a design by Dr. Rowand Anderson, Edinburgh, and is in the Fifteenth Century style. It consists of a nave and chancel, with vestry and organ chamber. Accommodation is provided for more than 200 worshippers, and provision is made for adding a transept on the south side. The nave is lighted by a wide mullioned and traceried window in the west gable, by a two-light window on the south side, and by two windows of four and two lights on the north side. The chancel is lighted at the east and south sides with windows of a similar character. The roofs are of iron.

THE LONDON COUNTY COUNCIL.

The usual weekly meeting of the London County Council was held on Tuesday afternoon at Spring Gardens, the Chairman, Sir John Lubbock, presiding.

Proposed Resignation of the Deputy Chairman.—Mr. Haggis, the Deputy-Chairman, said he desired to make a personal statement. Last week both the Chairman and Vice-Chairman intimated their intention to resign their offices in the Council, and after a week's consideration he (Mr. Haggis) had decided to follow their example. Had he been alone in the matter, he should not have decided to put the Council to the trouble of an election for so short a period as from October to March; but as the Chairman and Vice-Chairman had decided to resign, he should only be doing what he considered to be his duty in following their example.

Workmen's Trains.—Mr. Beachcroft submitted a long report of the Housing of the Working Classes Committee, from which we extract the following:—

"The Council on December 3, 1889, instructed the Housing of the Working Classes Committee to inquire into the services of workmen's trains provided by the several railway companies running to the suburbs of London, with a view of urging on the companies, where necessary, an increase in the number of cheap trains available for workmen, and also an extension of the hours during which workmen's cheap tickets may be used, and authorised the Committee to communicate with the Board of Trade on the subject. In accordance with that reference, communications were, as reported to the Council on February 24 last, entered into with the Board of Trade, resulting in the issue by the Board of a tabulated statement indicating the facilities at present afforded to the working classes by the various companies having termini in London. Your Committee, after careful investigation of this statement, came to the conclusion that such facilities failed to meet the present and growing wants of the population of London, and accordingly again approached the Board of Trade, in the hope that the Board would press the railway companies to take common action in order to grant further facilities, especially in the direction of cheap fares, and a more convenient ticket system. The Board thereupon proposed that a conference should be held with the general managers of the companies having termini in London, and suggested that the Council should be represented at such conference. A friendly and unofficial conference was accordingly held between the representatives of the railway companies referred to and a deputation from your Committee. Mr. Acworth, whose intimate acquaintance with the subject rendered his assistance in the matter most valuable, having been invited, kindly consented to be present. At this conference the views of your Committee were fully laid before the managers of the railway companies. It was urged that the companies should themselves consider the matter in common, and indicate to the Council how far they were able to agree to extend the facilities at present afforded in the following respects:—(*a*) Increase in number of trains; (*b*) increased uniformity of fare; (*c*) uniform ticket system. In support of the first of these, it was pointed out that the clearance of insanitary areas in London, and the more complete enforcement of the sanitary laws as to overcrowding, were likely to proceed more rapidly under the new Housing of the Working Classes Act than hitherto; that there is increasing difficulty in finding accommodation for the persons displaced, and that it is necessary, to meet the overcrowding difficulty, that inducements should be held out to some, at all events, of those displaced, to migrate into the suburbs. Further it was urged that the companies might reasonably be asked to consider the necessity for encouraging the development of suburban sites for workmen's dwellings by proceeding in advance of immediate demands in the matter of stations, rather than waiting, as is now the practice, for the demand to spring up before granting the supply. The attention of the managers was also called to the fact that many for whom the cheap trains are run, especially women, do not require to be at their work before 8 a.m., and that for them it was most necessary that cheap trains should be run up to that hour; and also that the return journey of these trains should commence at 5 p.m. instead of 6 p.m. With regard to the second point,—namely, cheap fares,—discussion ensued as to whether it was not possible to adopt a system of uniform fare within a distance, say, of ten miles of a terminus, and some expressions were dropped in the direction of fixing a maximum workmen's fare at ½d. per double mile; but nothing was elicited which could lead your Committee to suppose that this would be entertained. With regard to the third point, a discussion took place on the different ticket systems on the various railway lines. The weekly ticket system was objected to by your Committee if it involved no issue of daily tickets; but no attempt was made to enter into details on this

branch of the matter beyond indicating the general principle which it was desired to see adopted. Your Committee have now received a letter from Sir Henry Oakley which gives the following as the conclusions at which the managers have unanimously arrived on the matters referred to at the conference:—

'i.—That the accommodation already afforded to workmen by the companies respectively meets all requirements that have yet been made.

'ii.—That, considering the urgent conditions under which the suburban traffic of the companies is conducted, and the necessity of adequately meeting the convenience of the general public, it is not practicable to lay down any general rule applicable to all, either with reference to the hours of running or the rates to be charged.

'iii.—That the companies will respectively endeavour to supply all needful workmen's accommodation in any district in which workmen's houses may be provided, as the demands arise.

'iv.—That, the companies being subject to the Board of Trade regulations both as to the hours of workmen's trains and the fares to be charged thereby, any question or difference can be readily submitted for the decision of that department.

'v.—That these resolutions be communicated to Lord Compton and his colleagues, with the companies' acknowledgments for their courtesy in assisting in the discussion of this question.'

This reply cannot be deemed as in any sense satisfactory; it is clear, in fact, that if the matter is to be carried further, it can only be through the direct intervention of the Board of Trade. This being so, your Committee think that certain additional facts should be brought to the attention of that Board, such as, for example, the extraordinary growth of workmen's cottages and dwellings on the Great Eastern line, which has resulted from the cheap train service. It will have to be admitted that the railway companies, speaking generally, have voluntarily gone far beyond their actual statutory obligations. The mileage they are compelled to run by Act of Parliament amounts to forty-seven; the mileage they were actually running in 1883 was 763 miles, and it is found in the latest return that in the course of seven years these figures have more than doubled, as there are at the present time 305 workmen's trains run every day, with a total mileage of 1,807 miles. In view, however, of clearances for sanitary improvements, and of the fact that workmen's trains are already overcrowded, it is obvious that further facilities are necessary. If all the companies would take their fair share of what your Committee admit to be a burdensome obligation, a great deal would be done towards the solution of the difficulty. But in fact, there is no uniformity in the action of the companies. The Great Eastern has led the way in a most public-spirited manner, and the Great Northern and the South-Western have also made liberal arrangements. On the other hand, great companies like the North-Western and the Midland are still doing very little in the matter, and the Great-Western is doing nothing. Again, equally important with the question of train service is the question of the fare charged. This point, however, has hitherto received but slight attention. But an examination of the Board of Trade returns will show that in some cases, more especially in south and south-east London, so-called workmen's tickets are issued at little less than the ordinary third-class fares. Several companies have of late years been established for building cottage houses for the labouring classes in the suburbs, but the average rent of these suburban dwellings per room is about the same as that charged by proprietors of block buildings in London; it follows, therefore, that every penny paid by a dweller in the suburbs for railway ticket means extra rent to him as well as loss of time. Your Committee believe that anything beyond 2d. per day for railway fare would be prohibitive to many. Your Committee are specially impressed with the importance of its being urged that in future, when companies go to Parliament for compulsory powers to construct new railways or to add to existing railways into or in London, they should be placed under terms to run a sufficient number of trains at cheap fares to induce workmen to live in the less congested districts and suburbs of London, and to enable them to travel daily to and from their work at fares which they would be able to afford. The whole question is one of vast importance, and your Committee think, having particular regard to the strong expression of opinion on the part of the Royal Commissioners in 1885, that the Board of Trade should 'secure to the working classes the full benefit to which they are entitled under the Act of 1883' (viz., the Cheap Trains Act); that it is to the Board of Trade that the Council should look to take steps to secure the further facilities which seem to be necessary. Your Committee therefore recommend,—

'That, having regard to the urgent necessity there is for further encouraging the migration of the working classes into the suburbs, your Committee be authorised to select the most suitable instances in which they think action desirable, and to address a letter to the Board of Trade on the lines of the above report, asking that Board to use its powers to obtain an increase in the number of trains, a prolongation of the hours during which the trains run, increased uniformity of fares, and a more convenient and uniform system of tickets; and that the Board of Trade should now hold a conference with the companies at which the Council might be represented.'"

Mr. Beachcroft, in moving the adoption of the report, said the Committee believed most fully that it was only by means of facilitating the exit out of London that the great housing question could be grappled with.

The recommendation was agreed to.

Street Improvements.—The adjourned report of the Improvements Committee was next considered. In reference to the first of the proposed improvements, that of the widening of Tottenham-court-road by the removal of Bozier's-court, at a cost of 42,900*l.*, the Committee reported:—

"This is one of a class of improvements which, when their necessity is generally admitted, should not, if possible, be postponed, because claims for compensation are certain to grow. One of the difficulties which the Council has to encounter in carrying out improvements is that after they have been decided upon new claims are created. In many cases it is possible to frustrate designs of this nature by varying the line of improvement, but where, as in this instance, certain specific property must be acquired, increased expenditure arising from delay is unavoidable. The Council will not fail to remember that we have suggested a new departure in regard to contributions, viz., that the proprietors of the houses on the western side of Bozier's-court which, by the improvement, will acquire frontages to Tottenham-court-road, shall contribute one-half of the increased annual rental value for a limited period. We recommend—

'That the Council do apply in the next session of Parliament for powers to widen Tottenham-court-road at Bozier's-court, as shown upon the plan submitted herewith, provision being made in the Bill that the owners of the property, which by the removal of Bozier's-court will become the west side of Tottenham-court-road, shall contribute to the cost of the improvement by means of an improvement rate, to be ascertained and levied in accordance with the provisions suggested in our report of July 8 (with such modifications or alterations as may be hereafter sanctioned by the Council prior to the application to Parliament); the remainder of the cost being paid by the Council.'"

Mr. C. Harrison moved the following amendment:—

"That having regard to the present and exceptional position in which lessees and occupiers in the metropolis who are under contracts entered into in and since 1853, for the payment of rates will be placed by a charge or rate upon them for the next sixty years for repayment of capital sums raised for street improvement, and which capital sums were never intended to be covered by such covenants, this Council is of opinion that it is inequitable to increase the burden on such lessees by undertaking the proposed new street improvement at Bozier's-court, and therefore declines for the present to undertake such improvement."

Mr. F. Harrison seconded the amendment.

After some discussion, in which Major Probyn said that if they were going to wait until the adjustment of the incidence of taxation was brought about, they would have to wait a long time, a division was taken with the following result:—

For the amendment	45
Against.....	36

The next section of the report referred to the proposed Strand improvement, and was as follows:—

"The Council has more than once decided upon the demolition of the block of buildings on the southern side of Holywell-street, and the public has commended this decision. There can be no doubt, therefore, that this improvement must be undertaken sooner or later, and delay only serves to benefit persons who are ever ready to avail themselves of such opportunities for creating or increasing interests which eventually have to be paid for whenever the improvement is carried out. For example, in regard to this very proposition the valuer has advised us that owing to the multiplication of interests, and the erection of new buildings since it was first before the Council in 1889, the cost will be increased nearly 100,000*l.* These claims will continue to grow unless the Council seeks Parliamentary powers at once. We may point out to the Council that if this improvement be included in the Bill next session it is possible that a clause may be inserted for the purpose of preventing the creation of new claims, as approved by the Select Committee of the House of Commons in 1890. . . . . We recommend—

'(*a*) That the Council do apply in the next Session of Parliament for powers to remove the block of buildings on the south side of Holywell-street, and to deal with the enclosed spaces together with the public conveniences adjoining the Churches of St. Mary-le-Strand and St. Clement Danes.

'(*b*) That provision be made in the Bill that the owners of the property which by the removal of the block of buildings on the south side of Holywell-street will become the north side of the Strand shall contribute to the cost of the improvement by means of an improvement rate, to be ascertained and levied in accordance with the provisions suggested in our report of July 8 (with such modifications or alterations as may be hereafter sanctioned by the Council prior to the application to Parliament); the remainder of the cost being paid by the Council.'"

This improvement is estimated to cost 501,500*l.*

Mr. Campbell moved as an amendment:—

"That, with reference especially (1) to the increased use of the Thames Embankment, whereby serious congestion of traffic in the locality in question has been so largely diminished, if not altogether removed; (2) to to the immense outstanding debt of the Council; and (3) to the prospect of early and very heavy absolutely necessary expenditure in respect of main drainage, this Council considers it inadvisable to take any action at present towards the improvement of the Strand in the manner suggested by the committee."

Mr. Leon seconded the amendment.

Mr. Debenham said he thought that this improvement, like the last, should stand over until the question of the incidence of taxation had been settled.

After some further remarks, a division was taken, the voting being as follows:—

For the amendment	54
Against	28

On the amendment being put as a substantive motion,

Mr. B. Hopkins moved to amend it as follows—

"That the Council, for the reasons stated in the resolution passed this day with reference to Bozier's-court improvement, declines at present to undertake the widening of the Strand. At the same time the Council, being sensible of the importance and desirability of the improvement, and of the fact that its delay will tend to add to its cost, places on record its opinion that this improvement will have to be carried out so soon as its cost can be equitably provided for."

Mr. C. Harrison seconded the amendment, which was adopted.

The next part of the report, in reference to a proposed new street from Tooley-street to Bermondsey New-road, was as follows:—

"This improvement cannot be postponed without inflicting grave loss and inconvenience upon the public who will use the Tower Bridge, now in course of construction. By reference to the plan, put before the Council on July 28, it will be seen that the proposed thoroughfare divided the old burial-ground of St. Mary Magdalen, recently converted into a recreation-ground. Our limits of deviation would empower us, of course, at a future time to vary the direction of the street, but in order to allay any apprehensions which may exist as to the injury likely to be done to this open space, we propose at once to submit for the Council's sanction an altered plan, the estimated net cost of the improvement on this basis being 377,000*l.* It will be observed that this scheme provides for an undivided area exceeding in size the present one, and healthier and prettier. The line now proposed also utilises to the fullest extent the widening of Star-corner and Bermondsey New-road effected by the late Board, and it affords direct communication with Bermondsey-street and Long-lane, the two main thoroughfares of the district. We wish to remind the Council that the greater portion of the new thoroughfare will be 80 ft. wide and planted with trees, and thus will provide a most valuable open space for this, at present, very cheerless and over-crowded locality. We recommend—

'(*a*) That, subject to the Vestry of Bermondsey agreeing to contribute 25,000*l.*, the St. Olave's District Board 5,000*l.*, and the Vestry of St. George-the-Martyr, Southwark, 5,000*l.*, powers be sought in the next session of Parliament to enable the Council to construct a new street, 80 feet wide, from Tooley-street to Star-corner, Bermondsey, and to widen Bermondsey New-road to 60 feet. from its junction with Queen-street to Old Kent-road, as shown upon the plan submitted herewith.

'(*b*) That it be referred to the Housing, &c., Committee to consider and report as to the arrangements to be made for rehousing persons of the labouring class to be displaced by the formation of the new street.'"

Mr. Harrison moved, and Mr. Austin seconded,—

"That for the reasons set forth in the resolution passed this day in reference to the Bozier's-court improvement, the Council declines to undertake the southern approach to the Tower Bridge."

On a division the voting was as follows:—

For the amendment	43
Against the amendment	35

Another recommendation of the Committee was with regard to the improvement of Nine Elms-lane, Battersea. The report stated that—

"In addition to the foregoing improvements there is one other which, in our opinion, claims the Council's consideration, that of Nine Elms-lane, Battersea. The inhabitants of this part of London have frequently urged that only a very small portion of the County funds has been expended in this locality, and there is no doubt that the widening of Nine Elms-lane, which at present is inadequate for the large and increasing traffic, will have to be effected at some time or other. Judging from what has taken place we do not entertain strong

expectations of the local authorities contributing to the cost, which is one of the conditions of the improvement being carried out. We are of opinion, however, that they should have the opportunity offered them. We recommend—

'That, subject to the Vestries of Battersea and Lambeth agreeing to contribute between them one-fourth of the net cost, and subject to a contribution of 5,000*l.* by the South London Tramways Company, powers be sought in the next session of Parliament to widen Nine-elms-lane, Battersea, as shown upon the plan submitted herewith.'"

After an amendment, similar to those moved in reference to the other improvements, had been moved and seconded, a division was taken with the following result:—

For the amendment.....	48
Against	28

The Metropolitan Water Supply.—The Special Committee on Water Supply submitted a lengthy report, concluding with the following recommendations:—

"1. That the Council, whilst expressing its readiness, so far as its legal powers enable it to do so, to undertake the duties and obligations mentioned in the first, second, fourth, and fifth recommendations in paragraph 5 of the report of the Select Committee, is unable to accept the condition contained in the third recommendation, that the Council, if constituted the water authority, should be required to purchase the undertakings of the eight water companies 'by agreement, or, failing agreement, by arbitration, within a fixed period.' 2. That the Council is prepared to accept and act upon the following recommendation contained in the report of Sir William Harcourt's Select Committee on Water Supply—viz., 'That for certain purposes at least it would be desirable to acquire the undertakings of the existing companies if the same could be obtained on fair and reasonable terms.' 3. That the Council is of opinion that the price to be given for the undertaking of any company should depend, not merely on past dividends or on Stock Exchange values, but upon the true value of the undertaking, having regard to its legal position and liabilities; to the condition of the property; and to its ability to supply future wants. 4. That in order to arrive at a satisfactory conclusion on this last question it is essential, before any terms of purchase can be considered, that the liabilities to capital expenditure for new or supplementary sources of supply in the immediate future should be authoritatively ascertained.'"

Mr. Beachcroft having moved several amendments,

Mr. Westacott moved that the consideration of the question should be adjourned to the next meeting of the Council.

This was agreed to, and the debate was adjourned.

Improvement of Brooke's-market, Holborn:—The Housing of the Working Classes Committee, submitted a report with regard to Brooke's-market. We give most of the report as follows:—

"Between Gray's-inn-road and Leather-lane, in the midst of many narrow courts and alleys, there is a group of dilapidated houses and sheds which, even in the worst part of London, could only be described as a disgrace to civilisation. In 1883 the area was the subject of an official representation made to the late Board of Works under Cross's Act; no action was, however, taken by the Board, the area being considered too small to be treated by way of a metropolitan scheme under that Act. The widening by the Board of Works of Gray's-inn-road in the following year, which involved the displacement of some 3,400 persons of the working class, whilst it improved the main thoroughfare, served to increase the crowding of the courts abutting on the area in question to a marked degree, and the artisans' dwellings since erected have but added, and that materially, to the number of persons in the locality, without affording any adequate provision in the way of yards or open spaces for the children who now literally swarm in the district. The area, the subject of the present report, is known as 'Brooke's market,' and was till the other day covered by some fourteen dilapidated tenements and a few sheds; most of the tenements have lately been closed and partly pulled down as dangerous to health, and, as to the remainder, the following extract from the report of the Local Medical Officer of Health of April 23 last will speak for itself:—

'The Magistrate at Clerkenwell Police-court has adjudged that the remaining five, which are really and truly in a much more ruinous, dangerous, and insanitary condition, are *not unfit* for human habitation, and refused your application for a closing order against them under the Housing of the Working Classes Act, 1890. It is incumbent upon us, therefore, to consider what steps can be taken to render them less dangerous and injurious to health.'

The actual area occupied by buildings pulled down or remaining standing is about ¼ of an acre. The number of persons who would be displaced if the remaining buildings were pulled down is about sixty. Your Committee propose that this area should be acquired by scheme under Part 2 of the Act of 1890,—one end of it sold for the erection of dwellings sufficient to accomodate the sixty persons displaced, with provision for costers' barrows, and the remainder paved and left open, so as to form a breathing space for the inhabitants of the district. The area proposed to be acquired is, as stated, ¼ of an acre (exclusive of roads), of which about 1-20th of an acre would be occupied by the buildings to be erected, whilst the remainder, when added to the area of the existing roads, would afford an open space of about ½ an acre in extent. The Committee feel confident that if this scheme is given effect to, it will prove an inestimable benefit to the health of the neighbourhood, and will serve as an illustration of the advantages offered by the recent Act of Parliament. The valuer estimates the cost of the scheme, exclusive of paving works, at 4,750*l.*, which assumes a recoupment in respect of the proposed dwellings of 750*l.* Against this 4,750*l.* must be put the 1,500*l.* which the Holborn District Board of Works have now agreed to contribute, so that the 4,750*l.* would be reduced, so far as the estimate is concerned, to 3,250*l.* The area, if now acquired in its present condition, can, it would appear, be acquired under the Act of 1890 at the cost of the bare land plus building materials. If not acquired, the portion already cleared will be built upon, and in the present state of the building laws there is nothing to prevent rebuilding to a height far in excess of that of the old dwellings, thus adding to the congestion of the district and making it impossible hereafter, except at enormous cost, to effect the proposed improvement. The cleared portion of the area is now advertised to be let for building. The recommendation your Committee make is,—

'That, subject to an estimate being submitted by the Finance Committee in accordance with the statute, and to the Holborn District Board of Works contributing, as promised, 1,500*l.* towards the cost of such scheme, the Council do pass a resolution under section 39 (1) (*b*) of the Housing of the Working Classes Act, 1890, in respect of the Brooke's-market, Holborn area, and do order its seal to be affixed thereto; and do direct a scheme, under Part II. of the Act, to be prepared for the improvement of the area, and that your Committee be authorised to prepare a scheme accordingly.'"

To this Mr. Hutton moved the following amendment:—

"That, in the opinion of the Council, it is not desirable to deal with the area in Brooke's Market, Holborn, until further experience has been obtained as to the operation of the Act in relation to the Boundary-street scheme, and that in any case the Council should require from the Holborn District Board as the Local authority a larger contribution than 1,500*l.*"

Mr. Saunders seconded the amendment, which was lost by 27 votes to 25. A division having been challenged, there voted—

For the amendment	23
Against the amendment	33

The Council soon after adjourned.

FOUNDING QUAY WALLS BY HYDRAULIC METHODS.

THE use of the water-jet in sinking piles is now well-known, and many important works, notably the lower portion of the Manchester Ship Canal, have been greatly hastened in their progress by this simple device. It is an easy thing to direct a jet of water to the point of a pile, but the French engineers have gone beyond this, and in the Calais harbour works have adapted the system to putting in the foundations of quay walls, with, it is said, the most satisfactory results as regards economy and rapidity of execution. A description of these operations has been given by M. Bailly in a recent communication to the *Société des Ingénieurs Civils*. A short account of the work is also to be found in the "Proceedings of the Institution of Civil Engineers," vol. civ. The quay walls are founded in a fine and movable sand, easily loosened by water. The blocks of masonry were built upon a timber curb, and the foundations were carried to a depth of 8 to 11 mètres below the bottom of the basin. The quay foundations consist of a series of square cells built of rubble masonry upon a curb of strong concrete. The outer surfaces of these square cells are vertical throughout, while the central shaft is octagonal in form and splayed outwards at the base, so that the walls come to a sort of cutting-edge, which, however, has a width of 1 mètre, corresponding with the width of the concrete shoe. In general the walls are 8 mètres by 8 mètres in outside dimensions, the octagonal shaft being 4 mètres in diameter, and the wells are sunk side by side in the line of quay walls, leaving a space of 0·4 mètre between them. In sinking the series of cells, the first, third, fifth, &c., are got down, and then the intervening ones. Lastly, the intervening spaces of 0·4 mètre are excavated by the water-jet and filled with concrete, which dovetails the whole series together by filling two pairs of grooves, which had been formed in the sides of the contiguous masonry.

In sinking one of the cells the following operations are carried out:—The cell having been built to a height of about 4 mètres, the water-jet is directed under the cutting edge by means of wrought-iron pipes, which are carried down the central shaft. The sand being thus loosened is brought up by a centrifugal pump whilst held in suspension in water. The suction-pipe of this pump is carried down the centre of the shaft. Should there be a tendency of the cells to deviate from the vertical, this can be corrected by the manipulation of the jets. Taking an average, the rate of sinking was 4 mètres to 4½ mètres in twelve to fourteen hours, or say about 20 cubic mètres of excavation per hour.

The operations are of remarkable interest, as, indeed, are many points in connexion with the Calais harbour works, and open up a new field to those engaged on harbour and river works. It is said that the same system has also been tried with success in sinking in clay; but it is manifest that in such material the more ordinary methods of operation would appear comparatively to better advantage, and it is in sand that the system will achieve its greatest success.

Correspondence.

To the Editor of THE BUILDER.

GRAY'S-INN HALL.

SIR,—Upon seeing your notice of Gray's-Inn Hall in your issue of September 19 we made an examination of the building. We sincerely hope the Benchers will not be led to take off the plastering from the walls.

Such a scheme, we are convinced, would only lead to worse mischief than that of the work a hundred years ago. We found at the places where the walls have been laid bare that both the brickwork and the stone quoins had been hacked to receive this plaster, and the mischief then done can never be remedied.

We hope the Benchers will have the damaged plaster mended, but waste no money upon removing it.

THACKERAY TURNER, Secretary,
The Society for the Protection of Ancient Buildings,
9, *Buckingham-street, Adelphi, W.C.*,
October 2, 1891.

SEWER AND DRAIN VENTILATION.

SIR,—The two papers on page 241,—the one on "Sewer Ventilation," by Mr. W. Santo Crimp, and the other on "Sewer and Drain Ventilation," by Mr. R. Read,—are both very interesting. The former is especially valuable for the description given of the experiments conducted by Mr. Crimp as to what was the chief agent in producing air currents in the sewers. Mr. Crimp gives this credit to the wind, and I think he is quite justified in doing so; and we owe him thanks for his experiments.

As to Mr. Read's paper, while I agree with most of his preliminary remarks, I object to his deductions. He appears to state that, if the public sewers under the streets are well ventilated, the air in them would then be quite harmless. In order to get the ventilation he wishes, he abolishes all disconnecting traps between the houses and the sewer, and then desires to utilise all the water-closet soil-pipes to ventilate the sewers. As an engineer, he is ready to sacrifice the house and its inmates to benefit his sewer, but, as a plumber, I decline to allow him to do so. I prefer to ventilate the drains of my houses with fresh air direct from the atmosphere,—not with polluted, and, mayhap, disease-germ-laden, air from his sewer. Mr. Read pretends that with small air-inlets on the sewer only 6 in. square, placed about 80 yards apart, the air in the sewers would become as sweet as that on the mountain-top so being he were allowed to use all the soil-pipes of our houses as sewer ventilating outlets, but we do not believe him. His ideas, on page 242, in this relation, are purely visionary. A proper disconnecting-trap,—not too large,—between the house and the sewer is a thousandfold better protection against sewer-air and its accompaniments than ten times the amount of ventilation Mr. Read can give by his scheme. By Mr. Read's plan, the house-drain and soil-pipes would be made continual carriers of disease germs, which germs would at the first opportunity, pour into and defile the air of the house. I am supported by the Local Government Board and by the great majority of the members of the medical profession in objecting to this. As to Mr. Read's assertion that the disconnecting or interceptor trap on the drain obstructs the flow of the sewage, and is constantly manufacturing gas on its own account, and so is more dangerous than the sewer-air, that is all nonsense, especially if the trap is a good one, and not too large. In an inhabited house, the water in this trap is so often

changed that it does not get time to stagnate. While as regards even stagnant water in the trap, Dr. Carmichael's experiments proved that it prevented disease-germs passing through it, and also did not throw them off, so that Mr. Read's scheme is a delusion, and purely utopian.

All proper ventilation of the sewers should be independent of the soil-pipes, and beyond the water-seal of the disconnecting-traps.

W. P. Buchan, R.P.

CHURCH STEEPLES.

Sir,—I have an idea that you hold your own opinions on matters architectural with fair tenacity, while you guard yourself (I think) by a saving phrase somewhere in each issue of your publication, from responsibility for the opinions of correspondents published in its columns.

I cannot but think that you will agree with me that a disclaimer will have its value in respect to the view expressed by Mr. John Begg in to-day's *Builder*, of the superiority of the pretty little Late Perpendicular steeple of Islip Church, over the stately, simple, and grandly proportioned tower and spire, of early Geometrical date, at Raunds.

An Old Non-practising Architect.

October 3, 1891.

*** We certainly did not share Mr. Begg's view as to the relative merits of the two spires.

SAFE PRESSURE ON WATER-PIPES

Sir,—I am frequently much annoyed at damage done to property from the bursting of water-pipes, and have tried, without success, to learn from plumbers what is the safe pressure to put on a lead pipe of ¾ bore and 10 lbs. per yard; also a pipe ¾ bore and 12 lbs. per yard. Will you oblige by giving this a place in your journal? Perhaps some of your readers will give that information, or say where it can be got. J. A.

The Student's Column.

MARBLES.—XV.

ENGLISH MARBLES.

IT is very remarkable that whilst we have such an abundance of marble in the British Isles, we should import such great quantities from the Continent. True, we have no statuary marble which can for an instant compare favourably with the famous Carrara, and we must perforce be content still to buy largely of that material. But when we come to consider our enormous wealth in coloured marbles, inferior to none on the Continent in point of beauty, which exist in several parts of the country in enormous blocks, and in many instances within short distances of convenient carriage, our astonishment increases as we are made cognisant of the facts. More than one writer has essayed to account for this state of things. Referring to the matter, Mr. Arthur Lee says* that one of the reasons assigned for the existing state of affairs is that the British railway charges effectually destroy all chance of largely developing the home industry; that the iniquitous system by which the railway companies favour the foreigner has worked with full effect upon the marble trade. The same author then quotes the rates of carriage charged to English and foreign merchants, respectively, for taking marble over the same line of rail in England, and between the same towns, whereby it is shown that the foreigner obtains considerable advantage over his English competitor. No doubt this has had a pernicious influence in crippling the development of our marble trade.

Putting the question to a well-known marble-merchant the other day, the present writer was not surprised to hear him say he believed that if he were to give his British marbles some "high-sounding French or Italian name" they would be regarded in a more favourable light in the English market than they now are. It is this same feeling, doubtless, which has prompted many foreign marble merchants along the shores of the Mediterranean and other districts, to adopt the names of well-known ancient marbles for the produce of their own recently-opened quarries, no matter how superficial the resemblance between the ancient and the modern recipients of those names may be.

The marbles of the British Isles are principally derived from the Devonian, Carboniferous, Purbeck, and Wealden formations, and also from some metamorphic and igneous rocks. They are found in other formations than those just mentioned, however, especially in the Upper Silurian and Oolite systems. The beds concerned may now be geologically and geographically defined, and we shall take this opportunity of pointing out additional areas containing marble suitable for the extension of the industry in England.

The lowermost Palæozoic rocks of Britain do not yield any limestones of note; we find nothing approaching a marble (except that as manufactured from slate) in either the Cambrian or Lower Silurian beds. But when we arrive at the Upper Silurian we find a good horizon known as the Wenlock limestone, which consists of thick-bedded, grey, sub-crystalline limestone, very rarely of light pink colour, and argillaceous in parts. In the district along Wenlock Edge, in Shropshire, the rock is more crystalline; and where varied colours prevail, the matrix being charged with crinoids and corals, it forms a pretty marble, though Sir Roderick Murchison states that the slabs are of no great dimensions. The mass is essentially of a concretionary nature, and thus differs much from the flat-bedded Woolhope limestone, being for the most part marked by nodules of small size. Occasionally, however, the concretions are large, and are then locally termed "ballstones,"—some have a diameter of as much as 80 feet. The Wenlock limestone rarely exceeds 300 ft. in thickness, but though so thick near the village whence the formation derives its name, it thins out very rapidly in its range to the south-west. Speaking of the geographical distribution of this series of limestones and associated shales, Mr. R. Etheridge, F.R.S., remarks* that they are admirably shown in all the country between Aymestry and Ludlow along the "Wenlock Edge" to Benthal Edge, near Coalbrooke Dale, the Castle Hill and Wren's Nest near Dudley, near Walsall in Staffordshire, the west side of the Malvern Hills, May Hill, and in the neighbourhood of Usk in Monmouthshire. The formation is sometimes known as the Dudley limestone.

We obtain a considerable quantity and great variety of marbles from limestones of Devonian age. These are well developed in the county whence they derive their name, especially in those portions of it at Plymouth, Torquay, Combe Martin, and neighbouring districts. The rock itself is usually very crystalline in structure, being made up almost entirely of fossil corals and the remains of other marine animals. It may interest the reader to learn that some marbles are derived from fossil coral atolls of Devonian age, discovered, amongst other places, in Belgium. In that country the Middle Devonian beds are composed of great masses of limestone enclosed amongst beds which are generally shaley. Like many in Devonshire, these Belgian limestones and marbles are exclusively of organic origin, they being formed sometimes from agglomerated coral, sometimes from *débris*, and sometimes from the pulverulent detritus of the limestones. In this connexion it may be useful to note that marbles due to the agglomeration of corals, which are built up as hillocks and banks at the bottom of the sea, have been termed "constructed limestones" in contradistinction to those formed of detritus derived from more ancient limestones, or of *débris* of organisms, &c., which have recently been called "sedimentary limestones." The Devonshire marble trade is capable of great expansion, for the stones themselves are very beautiful, of every conceivable tint; they usually occur in sufficiently large blocks, and the supply is practically inexhaustible.

The Carboniferous Limestone found, geologically, above the Devonian, has considerable geographical extension, and many fine shell and Encrinite marbles are raised from it. When typically developed, Sir A. Geikie states, it is a massive, well-bedded limestone, chiefly light bluish-grey in colour, varying from a compact homogeneous to a distinctly crystalline texture, and rising into ranges of hills, whence its original name, "Mountain Limestone." It contains occasional scattered irregular nodules and nodular beds of dark chert. The fossils, which are extremely abundant in it, commonly stand out on weathered surfaces of the rock, but microscopic investigation shows that even those portions of the mass which appear most structureless consist of the crowded remains of marine organisms. From this, the student may derive a very fair idea of the structure of many Encrinite or Crinoidal marbles obtained from the Carboniferous Limestone. The formation may be regarded as derived almost entirely from the organic *débris* of a sea-floor. Diversities of colour and lithological character naturally occur in beds of such great thickness and extension. Here and there a more marked crystalline structure has been superinduced; sometimes the strata assume a compact homogeneous character, with black, grey, white, or mottled colours, which are the kinds commonly quarried as marble. It is usually a nearly pure carbonate of lime, of considerable hardness and imperfect conchoidal fracture. Those varieties which are very dark, almost black, usually contain a minute admixture of argillaceous and bituminous matter; bitumen in solid masses occurs very frequently in the beds of that division known as the "Scar" Limestone.

The Carboniferous Limestone is found in northern and central England; it surrounds the older Palæozoic rocks of Wales, and is well in evidence in Devon and Somerset. It forms the surface rock of nearly the whole of Ireland. Almost everywhere throughout the great tracts of country indicated, it is suitable for quarrying as marble, and the resources of the formation in this respect are capable of development to an unlimited extent. The limestone attains its maximum importance in the Pennine Chain, where, in one district, it reaches a depth of more than 4,000 ft. Traced towards the south-west, it dwindles away, and is not more than 500 ft. in certain places in South Wales. The thickness of the Carboniferous Limestone and shales of the Mendips, however, has been estimated by Sir Henry de la Beche and others at about 2,500 ft.,—this thickness being uniform from the neighbourhood of Bristol through the Mendip Hills.

The Rhætic, or Penarth beds have produced a rather celebrated material called "Landscape" marble, in the neighbourhood of Bristol. It is an argillaceous limestone, and the fanciful resemblance to a landscape depicted, whence the stone derives its name, is due to the peculiar dendritic markings which it exhibits. Formerly it was much used in the manufacture of small ornaments.

The Oolites have produced some comparatively unimportant marbles, which were worked in parts of Northamptonshire, Rutland, and Lincolnshire, in the Middle Ages.

The Purbeck beds, as is well-known, have for ages furnished beautiful shell marbles, obtained from the Isle of Purbeck, Dorsetshire.

Strata of Wealden age have also provided a fresh-water shell marble at Petworth, and other places in Sussex, to which further reference will hereafter be made.

No marbles are raised in England from the various formations of the Tertiary epoch.

* Lee, "Marble and Marble Workers," 1888, p. 21.

* Etheridge, "Phillips' Manual of Geology," part II., 1885, p. 113.

GENERAL BUILDING NEWS.

Barningham Church, near Barnard Castle.—This church was re-opened by the Bishop of Ripon on September 26, after having undergone a complete transformation under the hands of Mr. J. P. Pritchett, architect, of Darlington. The present building was erected in 1816, replacing the ancient Norman church, which was situated a few feet further north. Before the recent re-modelling commenced it presented the miserable appearance common to so many churches erected in the first quarter of the present century,—plain, bare walls, flat ceiling, shallow chancel, sheep-pen pews, &c., &c. The sum at command being very limited, the architect decided to leave the walls and roof-covering intact, and to expend the money in such works as could be undertaken without pulling down any part of the main fabric. The scheme, therefore, as carried out, comprises traceried windows, in place of the poor and rough old ones; the erection of arcades on each side of the nave, reducing the width and forming narrow aisles; erecting a chancel arch about 10 ft. further west than the old one, so as to lengthen the chancel by so much, and at the same time reducing its width by building thin walls inside; forming vestries on each side as chancel aisles; removing the flat ceiling, and, by cutting out the central parts of the tie beams, constructing open hammer-beam roofs with curved braces, without disturbing the rafters or slates; putting new fittings to the whole church as follows: Nave seats, low and open, of yellow pine, stained and dull-varnished, a quiet dark oak colour; chancel-stalls and prayer-desk, with carved poppy heads, all of Austrian oak, dull stained to match nave seats. A pulpit of the same material has been erected in memory of the Rev. Thomas Collins, rector of the parish from 1816 to 1829. The other new works include a panelled and carved reredos of similar oak; the enlargement and re-arrangement of the two stained-glass windows, one by Clayton & Bell, and one by

Wailes & Strang; the provision of a new window by Clayton & Bell, representing St. Michael and All Angels (the patron saints of the church); and the filling of the remainder of the windows with cathedral tinted muffled glass, having richly-coloured margins and roundels. The chancel is paved with mosaic tiles, and the whole church is heated with hot-water apparatus. The work has been carried out under the superintendence of Mr. Pritchett and his son, Mr. H. D. Pritchett, Mr. Dodds being clerk of works, and the following were the contractors:—Mason's work, Mr. Geo. Scott, of Barnard Castle, who also undertook and sublet the plumber's and glazier's work; joiner's work, Mr. Wm. Franks, Darlington; painter's work, Mr. Thos. Metcalfe, Darlington; heating apparatus, Messrs. Dinning & Cooke, Newcastle. The total cost is about 1,500*l*.

The Blackpool Tall Tower.—On the 25th ult. Sir Matthew White Ridley laid the foundation-stone of the tall tower which it has been decided to erect at Blackpool. The site of the tower covers an area of 6,000 square yards, but the space it actually covers is one-fifth of the site. The tower will be surrounded on the ground and two upper floors by an enclosure of brickwork, 110 ft. square and 74 ft. high, and this space on the first and second floors is utilised as a circus, accommodating about 2,000 persons, with four entrances from the central beach, and four in Bank Hey-street. On each side of the circus will be a market or Toy Arcade extending from Bank Hey-street to the Central Beach. These will be 61 ft. wide, and will average 165 ft. in length. The ground-floor facing the three principal streets will be chiefly occupied by shops and by a refreshment-room placed at the corner of Bank Hey-street and Victoria-street. A stair will give access to restaurants on the basements and first floors. The present aquarium will be reinstated at the south side of the circus, in a room 61 ft. by 175 ft., extending from Bank Hey-street to the beach, with windows on three sides and with two areas for light, each 30 ft. by 24 ft. in the centre. In addition to this room the aquarium will occupy a space on the east side of the circus 115 ft. by 19 ft. The space over the northern arcade will be devoted to exhibitive and recreative purposes. The north end of the first floor, 144 ft. by 24 ft., over the shops facing Victoria-street, will be equipped as a first-class restaurant. The second floor of the building will be occupied as a promenade concert-room, 223 ft. long and 110 ft. wide, and by open balconies facing the sea, and in Bank Hey-street, by a billiard-room at the north end. The third floor of the building will occupy the space over the circus. It will consist of open balconies, 18 ft. wide, on four sides, and of an enclosed hall 70 ft. by 44 ft., where the elevators from the ground-floor terminate, and where those going to the top of the tower commence. The two sides of this hall will be enclosed by cafés and by shops. The principal entrance to the tower and to the various rooms will be on the central beach, and will consist of a hall 48 ft. by 34 ft. The tower will rise to a height of 500 ft. The width of the base will be 100 ft., and the width of the tower under the main gallery will be 30 ft. The principal gallery will be at a height of 400 ft., and will form an enclosure 40 ft. square, surrounded by plate-glass windows, and covered with zinc. Above this will be a series of three open galleries varying from 30 ft. square to 14 ft. square. The approach to the tower will be by the main entrance on the central beach, where two hydraulic lifts are provided, which will convey visitors to the elevator hall, 85 ft. above the level of the street. The tower will be constructed of steel. The architects are Messrs. Maxwell & Tuke, of Manchester.

Catholic Church, Hanley, Staffordshire.—On the 22nd ult. there was opened a new Catholic church in Jasper-street, Hanley. The building comprises nave, aisles, transepts, tower, and baptistery, and is 52 ft. wide and 90 ft. long. The walls are of red brick with stone dressings, and the windows have geometrical tracery. The altar is in marble and other stone. The body of the church is fitted with pitch-pine benches, and on the walls are recessed modelled panels. The plans of the church, originally drawn by an architect from a distance, were afterwards put into the hands of Messrs. R. Scrivener & Sons, of Hanley, and the building has been erected by Mr. T. Godwin, of Hanley.

A New Fire-Brigade Station at Chiswick has been erected by the Local Board, from the design of Mr. Arthur Ramsden, the Surveyor, in the High-road. The front elevation is built of red brick, with Portland stone dressings, and contains three separate arched entrances,—first, for the steam fire-engine; second, for the manual engine; third, for the hose cart, which usually forms the vanguard on any alarm of fire. The engine-room is 30 ft. in length, 30 ft. in width, and 15 ft. in height. At the west side of these arches there is a commodious recess, with arched entrance at a height of 40 ft., for the accommodation of the fire-escape,—a provision which is absent in many fire-brigade stations. Opportunity has been taken to combine with the fire-station accommodation for the residence of the road foreman, who will be in charge of the yard behind, which is to be used for the storage of the carts, sweepers, water-vans, and steam-roller. This yard is roofed over with corrugated iron, excepting a part immediately behind the building, where it is covered with glass, under which the engines will be cleaned. The entrance to the yard is in Prince of Wales-place. In addition to the engine-room there is the fire-alarm office, workshop, lavatories, &c. A portion of the ground at the back has been utilised for the erection of a mortuary and road-foreman's office. Mr. William Blackburn has been the contractor for the erection of the building.

Premises for Technical Education, Liverpool.—On the 3rd inst. was opened at Liverpool a building specially constructed and furnished for providing technical instruction to evening students. The premises are situated at 21, Islington-flags. From front to back the length of the building is 121 ft. and 21 ft. wide. In the vestibule are two doors, one leading into the secretary's offices, and the other into a long corridor, from which are the entrances to the physics department and electrical laboratory, the engineering department, and the staircase leading to the drawing and brickwork and masonry department. The electrical laboratory is 67 ft. by 18 ft., having a concrete floor and roof light, and being fitted with working benches, masonry piers for galvanometer, &c., accommodation being provided for about thirty students doing practical work. The lecturer on this subject will be Mr. J. Lloyd Barnes. The engineering classes, which are under the direction of Mr. R. A. Sloan, will be held in the main lecture-room on the ground-floor and in the lecture-room immediately above. The lower room is 51 ft. long and 19 ft. wide. It is fitted up with a view to the experimental treatment of the subjects. In the lecture-room devoted to brickwork and masonry at the rear, which is 38 ft. by 19 ft., there are provided benches, tools, and materials for modelling. The carpentry-room, fronting to Islington, 31 ft. by 21 ft., will be under the direction of Mr. F. O. Cresswell. Benches, tools, and a large stock of timber are provided for these classes. Living specimens of the most common timber trees will also be provided in due course. In the modelling-room, which will be under the direction of Mr. J. Hargreaves Bond, separate tables and stands are provided for each pupil, together with examples for art students in figures, busts, and natural conventional foliage. The department devoted to typography and to lithography will be held in the same room, 31 ft. by 21 ft. The plumbers' workshop in the basement is 28 ft. by 20 ft., and approached from the main stair, centrally situated in the building. The benches have upwards of 100 ft. frontage, are wide and substantial in construction, and are well lighted. Other work will be carried on, such as photography, art drawing, &c. There are suitable sanitary conveniences. The lighting and ventilating are executed by Messrs. Sugg & Co. The heating throughout is by means of hot-water pipes, provided by the firm of J. R. Cooper & Sons. The contract for furnishing of desks, cupboards, benches, &c., according to special designs, has been executed by the North-Western Educational Company, of Liverpool. The general contractors for the alterations and improvements were Messrs. J. Henshaw & Sons, and Mr. J. Francis Doyle, of Liverpool, was the architect.

School Buildings, Morice Town, Devonshire.—The Devonport School Board opened a new school at Morice Town on the 2nd inst. The old school is to be set apart for boys and infants, and the new school will be devoted to girls. The building consists of three stories, and is constructed of grey nobbling. The main schoolroom on the ground floor is about 76 ft. long, 22 ft. wide, and 14 ft. high. It is lighted by centre-hung sashes. A class-room, 26 ft. by 19 ft., and a cloak-room 13 ft. 9 in. by 16 ft. are also provided on the ground floor. The main schoolroom on the ground floor, of similar dimensions to the room underneath, has a lantern-light roof. The playground, tiled with Chudleigh paving brick, is 77 ft. by 36 ft. The premises have been built at a cost of about 5,000*l*. by Mr. A. R. Debnam, of Plymouth, Mr. Hosking, the Board's Surveyor, supervising the work.

Theatre and Opera House, Cheltenham.—On the 1st inst. Mrs. Langtry and her London Company appeared at the new Theatre and Opera-house, at Cheltenham, when the theatre was opened for the use of the public. The new building has been erected from the designs and under the superintendence of Mr. Frank Matcham, of London. The contractors were Messrs. Bradney & Co., of Wolverhampton. It is Queen Anne in style, freely treated, and faced with dark red bricks, relieved by stone in the cornices and strings, &c. Light red panels and window-heads, carved in designs typical of the drama, are introduced. The windows and door panels are filled in with coloured glass. The building is entirely isolated except on the right hand side, where, in the front, it adjoins a house. The auditorium is planned to seat 1,200, and in event of an alarm the whole theatre could be cleared in three or four minutes. Means of escape are afforded by eleven doors, all opening outwards, and furnished with Kaye's safety bolts. The vestibule is octagonal in shape, and decorated from the architect's designs in Arabesque. The walls also are lined with Arabesque with panelled ornaments, decorated in gold and other colours. From the vestibule a corridor conducts the visitor to the orchestra stalls, and from the same point a stone staircase, 7 ft. wide, is carried up to a landing, on one side of which is a crush-room, with swing-doors opening on to the dress circle promenade. The staircase is continued up to a corridor running round the back of the upper circle, also entered by a swing-door. A refreshment-saloon is approached off the second landing of the staircase of the theatre itself. The decorations are in the style of Louis XV. Iron pillars support the tiers. Over the circular-headed proscenium are frescoes representing Tragedy and Comedy. The stage has a depth of about 45 ft., and a width of 70 ft. (including the scene-dock on each side), and is 45 ft. high. The actual opening is about 24 ft. in width and 30 ft. high, the proscenium being circular-headed, and surmounted by a shield bearing the arms of Cheltenham. Except on the stage, where Tolerton's patent flash-battens are fixed, the illumination is chiefly by electricity. The installation has been carried out by Messrs. Laing, Wharton, & Down.

Renovation of All Saints' Church, Hockley.—The Church of All Saints, Hockley, Warwick, was re-opened on the 23rd ult., after undergoing renovation. The edifice has been cleaned and redecorated within, and a reredos has been added. Mr. W. H. Bidlake is the architect responsible for the work. The ceiling panels have been filled in with devices, and the walls adorned with arcading and texts. The reredos is by Messrs. Jones & Willis. It is of Caen stone, with alabaster central panel and red marble pillars. Two wrought-iron screens in the organ gallery and lights in the chancel have also been added.

New Free Church, Glenboig, Lanark.—On the 3rd inst. the memorial-stone of the new Free Church at Glenboig was laid by Captain Colt, of Gartsherrie. The building has been erected from plans by Mr. George Arthur, architect, Airdrie, and will accommodate 384 persons. The cost will be about 1,300*l*.

Free Library, Newton Heath.—The free library erected in the district of Newton Heath, Lancashire, was opened to the public by the Mayor of Manchester, Mr. Alderman Mark, on the 28th ult. It is now about three years since the Local Board of Health for the district adopted the architect's design for the erection of the buildings. That portion now completed and opened for the use of the public is part of a scheme which included public baths, assembly rooms, free library, schools of science and art, together with adjoining public offices. The architects are Messrs. Booth & Chadwick, Manchester.

Infirmary Buildings, Romford.—On the 22nd ult. Mr. W. W. Glenny, Chairman of the Romford Board of Guardians, laid the memorial-stone of the new infirmary in course of erection on land adjoining the Union-house. The new infirmary will consist of a centre block of two floors, with a wing on each side. Each floor will accommodate twenty-eight beds, and rooms will be provided for nurses, &c. The principal wards and lavatories will be lined with glazed bricks, the floors will be fireproof, and there will be a fireproof staircase to the verandah for use in case of fire. In addition to the erection of the infirmary, additions are being made to the Union-house, including a dining-hall to seat 350 persons, a new kitchen, and a new boiler-house and water tower. The architect is Mr. F. Whitmore, of Chelmsford, and the work is being carried out by Messrs. J. S. Hammond & Son, of Romford.

STAINED GLASS AND DECORATION.

Window, Unitarian Church, Bradford.—A stained-glass window has been placed in the Unitarian Church, Bradford, in memory of the late Mr. Joseph Hainsworth, of Lidget Green. The subject represented is the Sermon on the Mount, to illustrate the text, "Wherefore by their fruits ye shall know them." The window is by Messrs. Powell Brothers, of Leeds.

Windows, St. Stephen's Church, West Bowling.—Two more stained glass windows have just been presented to St. Stephen's Church, West Bowling. These windows are designed to continue and complete the series of subjects as originally selected in illustration of the Passion of Our Lord. The windows are by Messrs. Powell Brothers, of Leeds.

Memorial Windows, Wyke Church, Bradford.—Three stained-glass windows have just been placed in the chancel of Wyke Church, Bradford, as a memorial to the late Vicar. They represent Our Lord as King of Glory and the Good Shepherd, with a figure of the Virgin. Four single lights with figures of St. Luke and St. John, Daniel and Aaron, have also been placed in the nave. The whole were designed and executed by Messrs. Warrington & Co., of London.

Memorial Windows, Church of St. Mary, Malton.—On the 28th ult., the Archbishop of York conducted a service of benediction of three memorial stained glass windows, which have been inserted in the Priory Church of St. Mary, Old Malton, Yorkshire. The windows, which are placed in the south wall at the eastern end of the church, have been inserted at the cost of members of the Kinnear family in memory of deceased relatives. They are from designs by Mr. Temple Moore, of London, the architect who carried out the recent restoration of the church; and are the

work of Mr. V. Milner, of London. The first window represents Christ as the Good Shepherd, carrying a lamb in His arms, and having a pastoral staff in one hand. The central figure of our Saviour is surrounded by the four archangels,—Michael, Raphael, Muriel, and Gabriel. The second window contains figures of St. Peter and St. Paul. The third window represents St. James and St. John.

Memorial Windows in Kettins Parish Church, Forfar.—On the 27th ult. Kettins Parish Church was re-opened after repairs and the introduction of five memorial windows. In the western gable two windows have been introduced to the memory of the late Mungo Murray, of Lintrose. The subjects of these windows are:—Of the upper, "The Majesty," and of the lower, "The Good Samaritan," with side-lights representing the Sower and the Reaper. In the eastern end of the church, two upper windows have been introduced, the one in memory of the late Graham Menzies, of Hallyburton; and the other in memory of the late Robert Stewart Menzies, of Hallyburton, M.P. for East Perthshire. The subjects of these windows are respectively, "The Agony" and "Christ bearing His Cross." A lower light in the eastern end has been inserted by the Rev. James Fleming and Mrs. Fleming, to the memory of their son, the subject being "Christ Blessing the Children." The windows, which are in the Renaissance style, have been executed by Messrs. Ballantine, of Edinburgh.

SANITARY AND ENGINEERING NEWS.

Redruth Water Supply.—The Redruth Local Board, at their meeting on Monday, the 28th ult., appointed Mr. H. Bertram Nichols, C.E., Birmingham, to prepare a scheme and to report fully, with estimate of the probable cost, for the water supply of the town of Redruth.

Waterworks, Penistone, Yorkshire. — The Penistone Local Board have arranged to supply a large quantity of water to several adjoining districts, and it will be necessary to put down additional duplicate pumping machinery, and otherwise alter and extend their works to provide the additional supply. The Local Board have called in Mr. W. H. Radford, C.E., of Nottingham, to report on the present works, and advise them as to the proposed works.

FOREIGN AND COLONIAL.

Dresden.—A new covered market is in course of erection in accordance with a design of the former city architect, Herr Rettig, whose name was to be found in the list of first prizemen at the great national monument competition at Berlin. The ground to be covered by this new erection measures 157 by 29 mètres, and the general plan is of a basilica form, with galleries. The cost is estimated at 55,000*l.*

Switzerland.—On the 1st inst. a new municipal theatre was opened at Fürich, on the "Dufourplatz." The building, which has been erected from the designs of the Vienna specialists, Messrs. Fellner & Helmer, is considered to rank among the few model ones completed during the last decade, and accroding to the very favourable articles of the local press, the plans must be exceptionally good, and safety against fire is obtained by the use of uninflammable materials, both in construction and fittings, and the adoption of the most modern appliances for lighting, heating, and scene-shifting. Seating room for 1,250 has been arranged for in the auditorium.

San Marino (Buenos Ayres.)—It may be of interest to note that at a theatre fire, which took place on the 3rd inst. in this city, a gas explosion which had caused the outbreak threw the large iron curtain of the divisional wall between auditorium and stage out of its bearings, thus preventing the possibility of its being used even if the attempt had been made. The building was gutted. Owing to the small number of the audience (half an hour before the rise of the curtain) no casualties occurred in the front of the house; on the stage, however, a number of employés and artists seem to have been more or less seriously injured by the explosion itself.

Opening of Two Sections of the Manchester Ship Canal.—A party of the directors of the Manchester Ship Canal Company, including the chairman, Lord Egerton of Tatton, and the vice-chairman, Sir J. C. Lee, were present on the 29th ult. at the formal opening of the Nos. 1 and 2 Sections of the Canal. Mr. E. Leader Williams, the chief engineer, was also of the party. A part of the Eastham Section has been utilised for passenger traffic for some time past, but from the 29th ult. eleven miles of the Canal, extending up to the river Weaver, will be open for goods traffic also. The work of filling with water the six miles of cutting in the second section has been carried out under the personal supervision of Mr. Clarke, engineer, and Mr. Jones, the agent. The next section to be opened will be the third, which extends from the river Weaver at Northwich to beyond Runcorn, and it is not anticipated that this will be completed till some time next year.

MISCELLANEOUS.

Glasgow Architectural Association. — On the 1st inst. a party of the members of the Glasgow Architectural Association visited Edinburgh, especially to view the Parliament Hall and Argyll Tower, recently restored. Mr. Hippolyte J. Blanc, the architect of the restoration, met the party at the Castle, and gave a detailed historical account of the buildings and a description of the methods followed in the work of restoration, thereafter conducting the members over the Hall, St. Margaret's Chapel, and the Argyll Tower. The Parliament Hall, with its finely-carved woodwork, large and richly-sculptured fireplace, timber roof, and colour decoration, was particularly admired, says the *Glasgow Herald*, and at the close of the visit the cordial thanks of the party were conveyed to Mr. Blanc by the President. Leaving the Castle, the members visited the Free Library and the Architectural Court of the Science and Art Museum, and, the party dividing, some went to see the quadrangles of the Medical School and the University, others preferring the National Portrait Gallery and Holyrood Palace. On Saturday, the 3rd inst., the members visited the Coats Memorial Church at Paisley, upwards of thirty attending. Mr. Hippolyte J. Blanc, the architect, conducted the party over the church, and described the special features and peculiarities of construction and arrangement. The structure, which is not yet completed, presents many points of interest.

Society of Engineers.—At a meeting of the Society of Engineers, held at the Town hall, Westminster, on Monday, the 5th inst., Mr. W. N. Colam, President, in the chair, a paper was read by Mr. Henry O'Connor on "Retort Charging and Discharging Machinery for Gas works." The author first pointed out that the subject was of great importance to many members of the Society. He then drew attention to the saving to be affected by machinery both in labour and cost, with reference to recent occurrences, and showed its advantages during strikes. He mentioned some of the more prominent reasons which have prevented the more general adoption of machinery, and the different points to be observed when designing new or refitting old retort houses. He advocated the simplification of all mechanism required in such places as gas works, where so much dust of a cutting nature abounds. The advantages and disadvantages of working stoking machinery only in winter, as suggested by Mr. Methven in his presidential address to the Southern District Association of Gas Managers, were touched upon. The author proceeded to describe the following systems which have been advocated since 1875 for supplying coal to gas-retorts:—Mr. Foulis' hydraulic machinery and new drawing apparatus; Rowland's Patent; West's systems; Longsdon's stoker and fan-like rake; Warner's system; the Ross stoker; Grice's conveyer, charger, and discharger; Jefferies' cannon stoker; Atterton's manual power system; Leutz's gravity charger; McDougall's continuous system; another suggested continuous system; Cunningham's hand-charger; Somerville and Cutler's scoop; Ruscoe's machine; Eitle's charger-hopper; Freeman's manual apparatus; Woodhouse's scoop and rake; a new scoop discharger. While refraining from considering the merits of sloping as against horizontal retorts, the author described the different suggestions for charging the former by Messrs. Coze, Morris, & Van Westrant, Trewby, Ruscoe, Braidwood, Hunt, and H. Woodall, and in conclusion suggested that as education spread, still greater difficulty would be found in getting a sufficient number of labouring men to undertake purely mechanical duties.

Lectures on English Architecture, Acton.—A series of fortnightly lectures have been arranged for delivery before the members of the Priory Club, Acton, by Mr. Arnold Mitchell, A.R.I.B.A., which include the pre-Norman, Norman, Transition, Early English, and Perpendicular periods. The lectures will be illustrated by limelight lantern views.

Reredos and Memorial Window, Callington Church.—The reredos for the morning chapel in Callington Church, Cornwall, designed by the late J. D. Sedding (who restored the church a few years ago) has lately been completed. The reredos forms the lower compartments of the east window of the north aisle. The subject of the whole composition is "The Church in Heaven and Earth." The glass in the tracery represents the Church in Heaven, the subject being "The Adoration of the Lamb." The six lights next below represent "The founders under Our Lord and by the inspiration of His Spirit of the Church on Earth." In the centre lights are SS. Peter and Paul, supported by the four Evangelists,—each by the two most connected with him,—that is to say, St. Peter by St. Matthew and St. Mark, and St. Paul by St. Luke and St. John. Below these six lights, and taking the place of six lights which are blocked-out by the vestry wall, are six niches filled with sculptured figures, which continue the subject of representation of the Church on Earth. In the centre niches are the figures of the Blessed Virgin and St. Elizabeth. The other four niches are filled by figures of four Latin doctors closely connected with the Church in England,—St. Jerome, St. Augustine, St. Gregory, and St. Ambrose. Below these niches and figures are six sculptured panels representing as many scenes in the life of the Blessed Virgin Mary (the dedication of the church is to St. Mary). The subjects of these panels are "The Annunciation," "The Birth," "The Purification," "The Finding Him in the Temple," "The Marriage of Cana in Galilee," and "The Crucifixion,"—arranged from left to right in the order we have mentioned. The sculptural work was executed by Mr. G. W. Seale, of Coldharbour-lane, Brixton, where we lately saw it. Mr. Seale was frequently employed by Mr. Sedding to execute such works as this, amongst which we may mention the reredos at Langport Church, Taunton, illustrated in the *Builder* for June 25, 1887.

The Shortlands and Nunhead Railway.—On the 24th ult., a visit was paid by the Society of Engineers to the Nunhead and Shortlands Railway Works, now in progress. This line commences by a junction with the London, Chatham and Dover Railway Company's main line at Shortlands station, and terminates by a junction with their Greenwich branch at Nunhead Junction. The object of the line is to develop some of the estates through which it passes, and which will become valuable residential properties, the owners of these estates being among the chief promoters of the railway. It will also give the London, Chatham and Dover Railway Company, who are under an agreement to work the line, an alternative route for their main line traffic into the metropolis, *viâ* Nunhead Junction and the South London line. For a suburban railway the country passed through is very open, the only building property actually taken being at Catford, yet the number of bridges is considerable, averaging about five per mile, this being mainly due to the number of bridges erected for the accommodation of the landowners in laying out their estates. It is stated that all the bridges will be of an "ornamental" character, and the slopes of the cuttings and embankments from Shortlands through Catford will be planted with shrubs and trees. Amongst the works are included three bridges over existing railways, two short brick viaducts, and a retaining wall in Catford, besides other public road and accommodation bridges. The bridge over the South-Eastern Railway, near Catford, will consist of two N truss girders with a skew span of 113 ft. each, with underhung cross girders and rail bearers. That over the London, Brighton and South Coast Railway, at Brockley, will consist of three girders 110 ft. span each, of a type similar to those just mentioned, the centre one being between the two lines of rails. The floor in this case will consist, as the headway is limited, of troughs built up with angle bars and plates. In the case of bridges carrying roads over the railway, the superstructure consists of girders and jack arches, except in three cases where headway is limited and longitudinally built trough flooring has been used, supported by a transverse girder on columns in the six-foot way. In the case of road bridges under the railway, trough flooring will also be extensively used on account of the limited headway in most cases. This construction also enables the floor to be made perfectly watertight, and the transverse-sleepers lying in the troughs being surrounded with ballast, the sound of passing trains will be deadened as much as possible. These bridges have all a clear span of 40 ft. at least, and, in some instances, where the span is greater, columns standing on the kerbs of the footways are being introduced to lessen the weight of the girders and to improve the appearance of the structures. Steel is being used for the bridge work throughout, the columns in the roadways and ornamental work being in cast-iron. There are to be five stations on the length, not including those already existing at Shortlands and Nunhead. It is expected that the line, which was commenced in July, 1890, will be ready early in the ensuing year. The work is being carried out under the superintendence of Mr. John Wolfe Barry, the Company's Engineer, and Messrs. Lucas & Aird are the contractors.

Association of Municipal and County Engineers.—The twelfth examination held under the auspices of this Association was held at the Townhall, Manchester, on Friday and Saturday, the 2nd and 3rd of October. The written and graphic examination was taken on the first day, and the *viva voce* occupied the greater part of Saturday. The examiners were Mr. E. Pritchard, M. Inst. C.E., Past-President; Mr. Jas. Lemon, M. Inst. C.E., Past-President; Mr. A. M. Fowler, M. Inst. C.E.; and Mr. Charles Jones, A.-M. Inst. C.E., Past-President. The next examination will be held in London in April, 1892.

The Calcutta Police Courts.—The Lieutenant-Governor visited the above building last week, with a view to satisfying himself in regard to certain alleged defects in the lighting and ventilation of the offices and Court-rooms, and to consider what remedy should be applied. We understand that certain minor alterations in the nature of clear-story openings, &c., were decided upon, and will, we trust, add to the comfort of those whose business takes them to the Court. The flooding of the rooms during heavy rains has, we learn, been greatly exaggerated; but even if this is so, it is not denied that this is far from being a creditable piece of work, pointing very clearly to the indispensability of properly-qualified architects if the design of important buildings is to prove satisfactory.—*Indian Engineering* (Sept. 5).

COMPETITION, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITION.

Nature of Work.	By whom Advertised	Premium.	Designs to be delivered.
*Truants' School at Lichfield	Burton-on-Trent, Walsall, and West Bromwich School Boards	.....	Nov. 21

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Architect, Surveyor or Engineer.	Tenders to be delivered.
*Road Works	Lewisham Bd. of Wks.	*Official*	Oct. 13
Villa, Moray-street, Elgin, N.B.	.....	A. & W. Reid	do.
*Roadmaking and Paving Works	Willesden Local Board	O. Claude Robson	do.
*Drainage Works, Paddington Cemetery	do.	do.	do.
*Broken Guernsey Granite	do.	do	do.
*Stabling, Canal-road	Mile End Vestry	J. M. Knight	Oct. 14
Additions to Station, Bolton Percy; Workshops, &c. Starbeck	N. E Railway	Wm. Bell	do.
Paving Portion of Hebble Brook	Halifax Corporation	E. R. S. Escott	do.
Alterations to Chapel, Seaton Burn, Northumberland	.....	J. G. Crone	do.
Sewerage Work	Altrincham U.R.S.A.	J. McKenzie	do.
*Boiler House, &c. Plumstead Infirmary	Woolwich Union	*Official*	Oct. 15
Shed, Retaining Wall, &c. Halifax	L. & Y. and G. W. R.'s Joint Com.	do.	do.
*Stabling at Keighley	Midland Railway Co.	do.	do.
Alterations to Abattoir, Glanville-street	Plymouth Corp.	G. D. Bellamy	do.
Fire Brigade Station, Gibbet-street	Halifax Corporation	J. Farrar	Oct. 16
Additions, &c. to "Bush Inn," Aberdare	.....	C. H. Elford	Oct. 17
New Shed, Albert Edward Dock	Preston Corporation	B. Sykes	Oct. 19
*Road Works	Hendon U.R.S.A.	*Official*	do.
*Granite, Gravel, and Hoggin	Barnet Local Board	do.	do.
*York Paving, Pitchings	Bermondsey Vestry	do.	do.
Gravel Road Metal	Penarth Loc. Bd.	Jas. Court	do.
Ten Houses, Grey Flatt, Brook-street, Carlisle	Mr. Potter	Mr. Johnston	do.
Widening Promenade, &c.	Wallasey Loc. Bd.	A. Salmon	Oct. 20
Public Library, Museum, School of Art, &c.	Carlisle Corporation	W. Howard Smith	Oct. 21
*Front Improvement Works	Borough of Ramsgate	W. A. Valon, C.E.	do.
*Oak Fencing, Parliament-hill, Highgate	London County Council	*Official*	do.
*Electric Lighting, Town Hall	St. Helen's Corp.	J. C. Broom	do.
*Works and Repairs to Buildings, Leeds District	H. M. Works	*Official*	Oct. 22

CONTRACTS.—*Continued.*

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
Additions, &c. to Hotel, Langland Bay, Swansea	Mrs. Jenkins	Ed. Bath	Oct. 22
Villa, Station-road, Grantown, N.B.	.....	J. Gilbert	Oct. 23
Cast-iron Water Main	St. Helens' (I. of W.) Loc. Bd.	W. J. Hodgson	Oct. 26
*Ten Houses, Catford	.....	F. & W. Stocker	do.
*Four Houses, Hammersmith	.....	do.	do.
*Porter's Lodge and Waiting-room, Upper Edmonton	Strand Union	W. S. Cross	Oct. 27
*County Court and Offices, Oldham	Com. of H.M. Wks. &c.	*Official*	do.
*Alterations, Additions, &c. Vestry Hall	Bromley St. Leonard Parish	A. & C. Harston	Oct. 28
*Water Supply Works	Conway, &c. Joint Water Supply Board	T. B. Farrington	do.
*Water Works Construction	Malvern Local Board	J. E. Palmer	Nov. 2
*Road Works	Windsor R.S.A.	W. Menzies	Nov. 3
*Construction of Lock	Barry Railway Co.	J. W. Barry	Nov. 14
*Erection of New Quarters, Plymouth	War Department	*Official*	No date
*Painting Various Buildings, Woolwich	do.	do.	do.
*Erecting Workshop	C. H. Glover & Co.	.....	do.
Villa Residence, North Duffield, Selby	J. V. Brooksbank	L. Harris	do.
Extension of Store	Station Town (Durham) Co-op. Soc	*Official*	do.
Wing to St. Michael's Home, Treforest, Cardiff	Very Rev. Monsignor Williams	C. C. Jones	do
Mechanics' Shop, Armley-road, Leeds	.....	J. Charles & Sons	do.
New Glass Works, South Shields (intermediate section)	E. Moore & Co.	T. A. Page & Son	do.
Additions, &c. to Tannery, Bedminster Bristol	.....	H. J. Jones	do.
*New Hall, Yorkshire College, Leeds	.....	A. Waterhouse & Son	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.
*Inspector of Nuisances	Kingston-on-Thames Corporation	100*l.*	Oct. 19
*Building Inspector	Tottenham Loc. Bd.	150*l.*	do.
Surveyor and Inspector of Nuisances	Bedwellty (S. Wales) Loc. Bd.	120*l.*	Oct. 26

Those marked with an Asterisk (*) are advertised in this Number. *Competition, p.* iv. *Contracts, pp.* iv., vi., *and* viii. *Public Appointments, p.* xviii.

Auctioneers' Benevolent Fund.—The annual meeting of the subscribers and donors to the Auctioneers' Benevolent Fund was held on the 7th inst. at the Mart, Tokenhouse-yard, Mr. Daniel Watney (treasurer) presiding. The report of the committee stated that the subscriptions for the past year amounted to 301*l.* as against 290*l.* in 1890, and that the donations included the gift by Mr. Frank G. Debenham of 500 gs., the income from which was to be applied in relief by the committee for the time being. The total sum paid in annuities was 198*l.*, as compared with 178*l.* in the previous year. —The chairman, in moving the adoption of the report, said it was of a satisfactory character. With reference to the finances of the fund, he pointed out that it possessed a capital sum of over 6,000*l.*—Mr. Tuckett seconded, and the motion was adopted. —Messrs. Driver, Foster, Green, Haines, Tewson, Wilkinson, Woods, and Tuckett were elected on the committee. — Mr. Daniel Watney having been re-elected as treasurer, and Mr. G. J. Elgood as auditor, the proceedings closed with a vote of thanks to the chairman.

The Sanitary State of Southend.—Unfortunately another season has gone by and the sanitary requirements of Southend remain unprovided for. The Local Board have more than once been advised to call in an expert in engineering in order to the preparation of a proper place for disposing of the sewage of the town; but instead of doing so, they have got their local surveyer to contrive some scheme, and have then submitted it to Mr. Mansergh, C.E. The result is that when the public inquiry came to be held last week before Mr. Thornhill Harrison, of the Local Government Board, grave fault was found with the scheme, which, it was alleged, would foul the foreshore and poison all the oysters on the neighbouring oyster-beds; and it further transpired that a report had been prepared on the proposal by Dr. Thresh, and that the Local Board declined to allow this document to reach the light of day. In the end, the Inspector advised the Local Board to reconsider the whole scheme, and he incidentally uttered a caution against the use of oysters bred on such grounds as those at Southend. Thus matters remain practically just where they have been since the sewers were credited with last year's serious outbreak of enteric fever.—*Lancet.*

Liverpool Engineering Society.—On the 19th ult., the members of the Liverpool Engineering Society paid a visit to the Norton Water Tower, for the purpose of examining the structure, which is part of the scheme for supplying Liverpool with water from the Vyrnwy Valley. The party, consisting of between thirty and forty gentlemen, on reaching Runcorn, were driven in carriages along the Warrington-road as far as the Manchester Ship Canal crossing. Here a halt was made to inspect the works, and Mr. Brightmore, the resident engineer of the Liverpool Corporation, explained the arrangement of the temporary and permanent pipes at this particular spot. It was stated that the permanent water-pipe was now in position under the Ship Canal, which is immediately contiguous to Fidler's Ferry. In answer to questions, Mr. Brightmore said that water was now flowing freely through the 12-in. tube across the river. This tube is divided into fifty sections or flexible joints, each containing five valves. After spending some time examining the two crossings, the party resumed their journey to the Norton Water Tower. The tower rises to a height of 115 ft. It is built of stone, and contains about 250 blocks, each weighing about seven tons. The tank at the top is capable of holding 650,000 gallons of water. It is 30 ft. 7 in. in depth in the centre, and its diameter is 80 ft., while the bottom is an inverted dome, which dips 15 ft. 7 in. Most of the masonry that composes the erection was brought from quarries at Runcorn and Helsby, and some of the stone was obtained at Norton. The foundations are of cement concrete laid to a depth of 10 ft. on natural rock. The tower was commenced between three and four years ago, and is now completed. Its diameter at the base is 94 ft., and at the top 82 ft. The ascent of the tower is made by iron stairs, which run between four large columnar pipes leading to the tank above. One of these pipes is for the overflow, the second is the inlet through which the water flows, and the two others are extra pipes for the supply of a greater volume of water than it is at present intended to conduct from Vyrnwy, if such an increase should in the course of time be thought necessary.

Mongewell on Thames.—Messrs. Kinninmont & Sons write: "Permit us to correct Messrs. T. Lawrence & Sons' 'correction' in your last issue. The whole of the facings were supplied by Messrs. Poulton & Son, of Reading. Messrs. Lawrence supplied the rubbers." We have referred to the architect, who confirms Messrs. Kinninmont's statement. Consequently, we fail to understand Messrs. Lawrence's communication to us.

A Disclaimer.—Messrs. Lumleys, the auctioneers, of 22, St. James's-street, who have carried on business for the last thirty-eight years, wish it to be known that they have no connexion with a firm of a somewhat similar name who have lately opened in St. James's-street.

Electric Traction.—According to an account published in a New York paper, the cost of operating the electric cars on the West-end Street Railway in Boston, U.S., averaged 20·37 cents per car mile during the month of June last. The operating expenses of the horse cars run by the company during the same time averaged 24·58 cents per car mile. The earnings averaged 42·71 cents per mile for electric cars, and 36·85 cents per mile for horse cars. The comparison of net earnings is 22·34 to 12·27. The total mileage of electric cars during the month was 360,568 miles, and of the horse cars 1,073,217 miles.

A New Process for Galvanising Metal.—We have had our attention called to a new process of galvanising metal, which is now being introduced by the London Metallurgical Company, Turnmill-street, E.C. It consists of a new method for readily coating wrought and cast-iron with an alloy of lead by simple immersion in a molten bath. It has the important feature of being cheaper than ordinary galvanising, and it is claimed for it that it forms a more durable coating, being less readily affected by acids. It is stated that the adhesiveness of the alloy is such that it is impossible to separate the coating by bending or twisting. Wrought-iron specimens which have been thus subjected until broken, and several of which we saw, show no trace of the metals having parted company. The alloy is slightly electro-positive to iron. Another advantage claimed for this system of plating is, that it does not need the careful preparation necessary for ordinary galvanising. Work cleansed by means of a feeble electrical current in a weak acid solution for a short time suffices. Netting and such-like articles can be made after the wire has been coated without running any risk of the covering metal being removed. In some cases the coated articles are subjected to an after process, so as to form an insoluble salt, thus still further increasing the life of the protecting metal. Steel wire coated by the London Metallurgical Company's galvanising process is, it appears, not so much reduced in strength as it is by ordinary galvanising; and it is asserted that in some cases it shows an increase after having been passed through the bath.

Partnerships.—We are requested to state that a partnership has been entered into by Mr. Arthur H. Mackmurdo, Mr. Geo. Hornblower, and Mr. E. Stanley Walters, architects, under the style of Mackmurdo, Hornblower, & Walters, and that their places of business are 94, Charlotte-street, Fitzroy-square, W., and 15, Lord-street, Liverpool. —— We are informed that by an arrangement the practice hitherto carried on in the joint names of Messrs. H. P. Burke Downing and W. R. Phillips will in future be carried on by Mr. H. P. Burke Downing in his own name, at 175, Strand, W.C.

The "Wells" Light.—Messrs. Wells & Co. send us a description of a new starting arrangement which they have now applied to this light, by the use of which the burner may be heated in three or four minutes without smoke or smell. Oil is admitted part way up the stand pipe, and air from the top of the tank then allowed to pass up through this column of oil by a valve provided for the purpose. The resulting spray burns from a small jet in the burner and quickly heats it. This burner is also used to run out the air remaining in the tank after the light is done, a process which aids in keeping the burner tubes clear. Messrs. Wells are also supplying a reflector for their lamps, for cases where a strong concentrated light is required rather than an all-round one.

A Powerful Fire-Engine. — An interesting series of experiments took place on the Southwark and Vauxhall Waterworks Company's premises, Battersea, on the 1st inst., when an exceptionally powerful steam fire-engine, constructed to afford more effectual protection against fires in the lofty buildings erected in Sydney, N.S.W., was publicly tested in the presence of Sir Saul Samuel, Agent-General for the Colony, the inspecting engineer appointed by the Sydney Fire Brigades Board, representatives of the insurance companies, and others. The manufacturers of the engine inform us that steam was raised to 100 lbs. pressure in ten minutes twenty-four seconds, and various jets, up to 1¾ in., were thrown to a distance of about 270 ft. Four 1-in. jets were also thrown to a distance nearly as great. The engine has a capacity of 1,000 gallons per minute, and has been built by Messrs. Shand, Mason, & Co., of London.

MEETINGS.

TUESDAY, OCTOBER 13.

Sanitary Institute (*Lectures for Sanitary Officers*).—Mr. G. Reid on "Water Supply, Drinking Water, Pollution of Water." 8 p.m.

WEDNESDAY, OCTOBER 14.

Sanitary Institute (*Lectures for Sanitary Officers*).—Professor H. Robinson on "Drainage." 8 p.m.

London Society for the Extension of University Teaching (*Chelsea Centre*).—Mr. A. H. Fison, D.Sc., on "Electricity and its Modern Applications." II. 8.15 p.m.

FRIDAY, OCTOBER 16.

Architectural Association.—Presidential Address by Mr. F. T. Baggallay. 7.30 p.m.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

11,359.—PAINT OILS: *J. Baptista* (*U.S.A.*).—According to this invention, in order to use in place of linseed oil any mineral oil, drying and colouring and clarifying agents are used, and a detailed process of manufacture is described in the specification.

15,901.—VENTILATORS: *J. E. Sears*.—The salient features of this invention are (1) in arranging the inlet for the atmospheric air on the trumpet-mouth principle, so that the inlet air becomes concentrated when passing the exit for the vitiated air, which concentration causes the current of air to pass at an increased rate; setting up an increased suction; and (2) if desirous, of drawing out vitiated air from two or more different sources, arranging the ventilator to act accordingly.

17,315.—WINDOW-FASTENINGS: *H. Lamplough*.—A flat strip of metal forms the fastener, which is the subject of this patent. It is shaped as a ⊥, a cavity being left in the upright portion. In this cavity an angular-shaped metal plate is suspended by a rivet or screw, balanced so as to act automatically with the opening or closing of the window-sash, to the top one of which the fastening is fixed by two screws.

19,243.—CASES FOR SOCKET-BOLTS: *G. Clarke*.—According to this invention, a flat strip of metal is drawn or bent so as to form the socket in one piece.

10,267.—SASH-FASTENER: *W. F. Stevens*.—The fastener in this patent is fixed to the sash in the ordinary way, so that when an arm or lever is pulled on to a plate, a point slips under a guide and forces the sashes against the respective pulleys and stiles, preventing the windows from rattling.

12,810.—AUGERS: *W. Caldwell*.—In the screw augers which are the subject of this patent, the cutting edges of both lips of the auger are continued spirally round the core or cone of the point to a point just beyond the apex of the cone, in such a way that the two threads with the cone form a double threaded screw of wide or open pitch.

NEW APPLICATIONS FOR LETTERS PATENT.

September 21.—15,984, Mary Greene, Windows.—15,988, E. Wright, Fireplaces and Cooking Ranges.—16,005, G. Pitt, Constructing Flues for Brick, Terra-cotta, and other Kilns.—16,009, W. and E. Freeman, Joining Earthenware Sanitary and other Traps and Nozzles on to Lead Pipes, to enable Plumbers to make Permanent Joints.—16,024, E. Schuster, Water-closet with Automatic Flush and Lid-raising Device.

September 22.—16,058, J. Martin, Manufacture of Lead Pigments.—16,098, J. Fell, Manufacture of White Lead.—16,105, J. Kearton, Sash-fastener.

September 23.—16,126, J. Hill, Screw-expansion Union Joint for Connecting Gas and Water-pipes.—16,153, W. McCormick, Oscillating Plunger for Starting the Discharge of Syphon Flushing-cisterns.—16,164, J. Wedderburn, Locks and Bolts for Fastening Doors, Gates, &c.

September 24.—16,200, H. Ratcliffe, Decorative or Ornamental Wallings, Ceilings, &c.—16,201, H. Ratcliffe, Fancy or Ornamental Bricks, Tiles, or Slabs.

September 25.—16,275, E. Taylor & H. Cliff, Door Stops, &c.—16,290, Nicholas Bros., Cord-fastener or Holder for Ventilators, Skylights, &c.—16,309, F. Weldon, Device for connecting the parts of scaffolding, &c.

September 26.—16,350, J. Simpson Blake, Stone-breaking Machine.—16,375, W. Taylor, Burning and Cement-making Materials, Lime, Chalk, &c.—16,383, W. Trubshaw, Door Furniture.

PROVISIONAL SPECIFICATIONS ACCEPTED.

14,464, H. Emery, Attaching or connecting Rain-water Pipes to the walls of dwelling-houses, buildings, or other similar structures.—14,692, W. Worrell, Method of Securing Doors, Windows, Gates, &c., and which cannot be opened from the outside.—14 793, H. Holloway, Iron Wall-Tied Brick, for the better binding together and strengthening of buildings.—14,867, B. Binnington, Better Roofing of Buildings.—14,900, J. Smith, Chimney-pots.—14,948, H. Seiling, Paint Composition.—15,259, A. Barr, Hinges or Fastenings for Windows.—15,291, W. Lawrence, Chimney-pot, to Prevent Down-Draughts and Cure Smoky Chimneys.—15,509, G. Dolenz, Artificial Stone and Marble.—15,656, E. Bastin, Machinery for Brick and Tile Making.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to Opposition for Two Months.

16,131, J. Payne, Continuous Firing Kiln for Burning and Staining Glass, China, Tiles, Enamels, &c.—15,937, J. Thompson, Ventilators.—15,219, W. Reagan and R. Longley, Composition of Matter for Plastering Walls, &c.—12,591, S. Collins and others, Window Sash-holding and Balancing Devices.—15,813, E. Stern, Clay-cutting Device for use in Brick-making.—14,076, J. Sherwin, Encaustic Method or Process of Decorating Tiles, Placques, &c.—12,235, L. Linden, Heating Greenhouses, &c., with water.—14,375, H. Lake, Door-checks and Closers.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

SEPTEMBER 28.—By *J. Amand & Co.*: 9, 11, and 13, Morton-rd., West Ham, u.t. 98 yrs., g.r. 15*l.*, r. 66*l.* 6s., 290*l.*—By *H. Hooper*: 117, Queen's-rd., Finsbury-pk., u.t. 84 yrs., g.r. 10*l* 10s., r. 65*l.* 470*l.*

SEPTEMBER 29.—By *Rutley, Son, & Vine*: 199 and 201, Cornwall-rd., Notting-hill, u.t. 69 yrs., g.r. 16*l.* 16s., 615*l.*; 9, Barclay-st., Somer's-town, u.t. 12 yrs., g.r. 3*l.*, r. 30*l.*, 120*l.*—By *Eastman Bros.*: "Milton Cottage," St. German's-rd., Forest-hill, f., 550*l.*

SEPTEMBER 30.—By *Messrs. Aldridge*: 13 and 15, Selhurst New-rd., Selhurst, u.t. 75 yrs., g.r. 8*l.*, 145*l.*—By *F. Jolly & Co.*: 68, Ockenden-rd., Islington, u.t. 51 yrs., g.r. 7*l.*, 400*l.*; 9, Aspland-grove, Hackney, u.t. 69 yrs., g.r. 4*l.* 10s., r. 36*l.*, 230*l.*—By *R. Tidey & Son*: 4 and 5, Pan-street, Islington, u.t. 16 yrs., g.r. 10*l.* 10s., 280*l.*; 213, Essex-rd., u.t. 26 yrs., g.r. 3*l.* 8s., r. 50*l.*, 300*l.*—By *Henry & Latchford*: 4 to 10, The Polygon, Clapham, u.t. 17 yrs., g.r. 105*l.*, r. 268*l.*, 450*l.*—By *Inman Sharp, Harrington, & Roberts*: 73 to 79 odd, Stafford-rd., Upton-pk., u.t. 91 yrs., g.r. 10*l.*, r. 58*l.* 10s., 360*l.*

OCTOBER 1.—By *J. A. Jones*: 53, Cambridge-ter., Pimlico, u.t. 42 yrs., g.r. 9*l.*, r. 50*l.*, 495*l.*; 95, Tachbrook-st., u.t. 34 yrs., g.r. 8*l.*, r. 50*l.*, 525*l.* By *A. G. Thomson & Co.*: 129, Alderney-st., Belgravia, u.t. 41 yrs., g.r. 8*l.* 8s., 500*l.*—By *Newbon & Co.*: 7 and 8, Inkerman-rd., Kentish Town, u.t. 33 yrs., g.r. 10*l.*, r. 56*l.*, 360*l.*; 1, Wheatsheaf-rd., Leyton, and plot of land, f., r. 45*l.*, 1,020*l.*; 1, 3 to 62, Cumberland-ter., Hornsey, f., r. 179*l.*, 2,270*l.*; Cumberland-ter., f.g.r. of 7*l.*, with reversion in 94 yrs., 160*l.*

[*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; l.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.]

PRICES CURRENT OF MATERIALS.

TIMBER.		
Greenheart, B.G. ton	8/0/0	9/0/0
Teak, E.I... load	8/0/0	14/0/0
Sequoia, U.S.ft.cu.	2/3	3/0
Ash, Canada load	2/5/0	4/0/0
Birch, do.	2/5/0	4/5/0
Elm, do.	3/5/0	4/15/0
Fir, Dantsic, &c.	2/0/0	3/10/0
Oak, do.	2/10/0	4/10/0
Canada.....	4/17/6	6/10/0
Pine, Canada red	2/10/0	3/10/0
Do, yellow	2/0/0	5/0/0
Lath, D'ntsic, fath	5/0/0	6/0/0
St. Petersburg	5/0/0	7/0/0
Deals, Finland, 2nd & 1st std 100	8/0/0	10/0/0
Do, 4th & 3rd..	7/10/0	8/10/0
Do. Riga	6/10/0	8/0/0
St. Petersburg, 1st yellow ..	10/0/0	14/0/0
Do. 2nd yellow	8/10/0	9/10/0
Do. white	7/0/0	10/0/0
Swedish	7/0/0	15/10/0
White Sea	8/10/0	17/0/0
Canada, Pine 1st	13/0/0	25/0/0
Do. do. 2nd....	9/0/0	18/0/0
Do. do. 3rd, &c.	6/10/0	10/0/0
Do. Spruce. 1st	8/0/0	10/10/0
Do. do. 3rd & 2nd.....	6/0/0	7/15/0
New Brunswick	5/10/0	7/10/0
Battens, all kinds	3/10/0	15/10/0
Flooring Boards, sq., 1 in. prep. 1st	0/8/0	0/14/0
Do. 2nd.....	0/7/6	0/11/0
Other qualities	0/3/0	0/8/0
Cedar, Cuba ..ft.	/4	/4½
Honduras, &c.	/4	/4½
Mahogany, Cuba.	/4½	/0
St. Domingo, cargo av	/4½	/8½
Mexican do. do	/4½	/5
Tobasco do. do	/5½	/7
Honduras do..	/5½	/6½
Box, Turkey ton	4/0/0	13/0/0
Rose, Rio.....	10/0/0	20/0/0
Bahia	9/0/0	18/0/0
Satin, St. Domingo . ....ft.	0/0/9	0/1/3

TIMBER (*continued*).		
Satin, Porto Rico	0/0/10	0/1/6
Walnut, Italian..	0/0/3½	0/0/7
METALS.		
IRON—Pig, in Scotland .....ton	47/2/0	47/3/0
Bar, Welsh, in London.....	6/0/0	6/2/6
Do. do. at works in Wales	5/10/0	5/12/6
Do. Staffordshire, in London	6/10/0	6/15/0
COPPER—British, cake and ingot	53/10/0	55/0/0
Best selected ..	54/10/0	56/0/0
Sheets, strong..	64/0/0	65/0/0
Chili, bars	51/0/0	51/17/6
YELLOW METAL lb.	0/0/5⅜	0/0/6
LEAD—Pig, Spanish ....ton	12/3/9	0/0/0
English, com. brands	12/7/6	12/10/0
Sheet, English, 3 lbs. per sq. ft. and upwards ..	14/5/0	0/0/0
Pipe	14/15/0	0/0/0
ZINC—English sheet .....ton	27/10/0	0/0/0
Vieille Montagne.....	28/0/0	0/0/0
TIN—Straits	91/0/0	91/7/6
Australian	91/0/0	91/7/6
English Ingots	94/0/0	95/0/0
OILS.		
Linseed .....ton	19/12/6	20/0/0
Cocoanut, Cochin	29/0/0	0/0/0
Do. Ceylon	25/5/0	0/0/0
Palm, Lagos	25/0/0	0/0/0
Rapeseed, English pale	30/10/0	0/0/0
Do. brown	29/0/0	29/5/0
Cottonseed ref...	20/5/0	0/0/0
Oleine	0/0/0	0/0/0
Lubricating, U.S.	4/10/0	5/10/0
Do. refined	6/0/0	11/0/0
TAR—Stockholm barrel	0/18/6	0/19/0
Archangel	0/12/0	0/12/6

TENDERS.

[Communications for insertion under this heading must reach us *not later than* 12 *noon on Thursdays.*]

BANBURY.—For the surface-water drainage, forming curbing, &c., of Castle-street East, Banbury, for the Corporation of Banbury. Mr. S. E. Burgess, Borough Surveyor, Banbury. Quantities by the Surveyor:—

Claridge & Bloxham ..	£606 16	S. Orchard & Son, Banbury*	554 0
J. S. Kimberley.....	599 0		
Jno. Grant.....	565 0		

* Accepted.
[Surveyor's estimate, £589 10 10.]

CARDIFF.—For the extension of Cardiff Free Library. Mr. Seward, architect:—

D. J. Davis	£27,200 0 0	Brown & Backhouse	£23,330 0 0
C. C. Dunn	24,902 11 2	Burton & Co.	22,678 0 0
Stephens, Bastow, & Co.	23,599 0 0	Bowers & Co.	22,605 10 0
		J. Hopkins	22,227 18 11
Thomas & Co.....	23,516 0 0	Turner & Co.	21,030 0 0

CHAPELTOWN (Sheffield).—For the construction of a cast-iron tank, &c., capable of holding 140,000 gallons of water, at Potter-hill, Chapeltown, for the Wortley Union Rural Sanitary Authority. Mr. G. E. Beaumont, Surveyor, Grenoside, Sheffield:—

Stanton Iron Company	£1,043 0 0
Newton, Chambers, & Co., Thorncliffe, Sheffield*	800 0 0
Jno. Robinson	700 0 0

* Accepted.

CLACTON-ON-SEA.—For the erection of a private hotel on the Marine Parade, for Mr. John Jones, J.P. Mr. W. A. Finch, architect, 76, Victoria Park-road, London, N.E.:—

E. A. West	£4,243	Everett & Son	£3,769
G. Dobson	4,180	W. Sargeant.....	3,340
A. Porter	3,867	N. DeMaid, Clacton*.....	3,225
J. Grimes	3,830		

* Accepted.

CROYDON.—Accepted for erecting sixteen small houses at Leslie-grove, Cherry Orchard-road, for Mr. Hooker. Mr. H. Freeman, architect:—

G. H. Martin & Co., West Croydon..... £2,987 0 0

CROYDON.—Accepted for erecting a pair of cottages at the Oval-road, for Mr. George Martin:—

G. H. Martin & Co., West Croydon..... £335 0 0
[No competition.]

EDGBASTON.—For the erection of residence, Sandon-road, Edgbaston, Warwick, for Mr. Thos. Burns. Mr. Bradford Tomlinson, architect, Coventry. Quantities by the architect:—

Taylor Bros. £973 0 0

EWELL (Surrey).—For alterations and additions to Dr. Hall's private asylum, near Ewell. Mr. I. Gotham, architect, Ewell. Quantities by the architect:—

Rey & Son	£891	I. Dodd & Co.*	£779
H. Peacock	845		

* Accepted.

LEATHERHEAD.—For the erection of proposed new institute at Leatherhead. Mr. Paul B. Chambers, architect, Brighton:—

Freeman.....	£4,580	Longley	£4,095
Chessman	4,499	W. H. Batchelar.....	4,020

LLANELLY.—For the erection of a new theatre, Llanelly, for Mr. J. Noakes. Mr. T. P. Martin, architect, Heathfield-street, Swansea:—

Jenkins Bros.	£3,200 0 0	Brown, Thomas & Johns	£2,692 17 6
D. Williams	3,196 0 0		
Williams & Evans ..	3,114 5 9	T. P. Jones	2,690 0 0
Mercer	2,888 19 0	T. Hughes, Llanelly*	2,645 0 0

* Accepted.

LONDON.—For alterations and improvements to No. 14, Baker street, for Messrs. Moss Bros. Messrs. John Hill & Co., architects:—

D. Baker (accepted)..... £138 0 0

LONDON.—For alterations and additions to No. 26, Upper Marylebone-street. Mr. T. H. Watson, architect:—

Garner.....	£1,495	Stevens	£1,277
Bamford.....	1,450	Baker	1,260
Erridge	1,384	Perkins	1,237

LONDON.—For the erection of concert-hall, and alterations to the "Three Crowns," North Woolwich, for Messrs. West & Co., brewers. Mr. John E. Pinder, architect, Bridge House, South Tottenham:—

C. Wood, Columbia-road, Hackney-road* £1,680 0 0

* Accepted.
[No competition.]

LONDON.—For the erection of additional wards and work-rooms to the Workhouse, Homerton, for the guardians of the Hackney Union. Mr. W. A. Finch, architect, 76, Victoria Park-road, Hackney, N.E.:—

Garlick & Horton	£1,999	J. Holland.....	£1,298
Brass & Son	1,535	A. Porter, Tottenham* ..	1,183
J. H. Mollett	1,435		

* Accepted.

LONDON.—For the erection of a boundary-wall at St. John's-road Workhouse, for the Guardians of the Poor for the Parish of St. Mary, Islington. Mr. William Smith, architect, 65, Chancery-lane:—

Langham	£799	Minter	£604
Ruffell	690	Stevens Bros.	565
Killingback & Co.	656	Brass & Son (accepted).....	517
Ward & Lamble	637		

LONDON.—For alterations at the Streatham-common Branch of the London and South-Western Bank. Messrs. Tolley & Son, architects. Quantities by Messrs. Parr & Son:—

	A.		B.
Candler & Son	£1,493	....	£1,145
Smith & Son	1,488	....	1,135
Mason	1,475	....	1,125
Walker.....	1,446	....	1,029
Johnson & Co., Ltd.	1,360	....	1,037
Gould & Brand	1,325	....	1,019
Bryan & Son	1,325	....	978
Bowyer.....	1,296	....	995
Marriage (accepted).....	1,210	....	920

LONDON.—For the erection of new business premises, 33 and 35, Neal-street, Long-acre, W.C., for Mrs. Ann Mercer. Mr. W. H. Woodroffe, architect, 214, Great Dover-street, S.E.:—

Outhwaite & Son.....	£2,769	Hall, Beddall, & Co.	£2,648
Hart Bros.....	2,697	G. Newton.....	2,600
Holloway Bros.	2,689	H. Burman & Sons.....	2,475
J. Smith & Sons	2,689	G. Parker*.....	2,250
W. Downs	2,677		

* Accepted.

LONDON.—For the erection of a factory adjacent to 270, Camberwell-road, S.E., for Mr. Ebenr. Roberts. Mr. W. H. Woodroffe, architect, 214, Great Dover-street, S.E.:—

King & Son	£925	G. Payne	£772
Burman & Sons	800	W. Goad (accepted)	719

LONDON.—For the erection of Holy Trinity Parish-hall, Canning Town, E. Messrs. J. T. Newman & Jacques, architects, 2, Fen-court, E.C. No quantities:—

A. Reed	£2,258	Hearle & Farrow.....	£1,780
G. J. Hosking	1,878	J. Noakes	1,660

LONDON.—For the erection of public hall and offices, Canning Town, for the Corporation of West Ham. Mr. Lewis Angell, F.R.I.B.A., Borough Engineer, Town-hall, Stratford:—

Scharien & Co.	£20,269 0	B. E. Nightingale —....	£18,667 0
A. Reed	19,350 0	*J. Holland*..... ..	18,585 0
Gregar & Son	19,260 0	A. Kellett	18,125 10
W. J. Maddison	19,100 0	*Perry & Co.*	17,997 0
J. Morter	18,990 0	Allen & Sons, Kilburn*	17,150 0

* Accepted.

NOTE.—The contractors whose names are in italics declined the conditions of contract advertised by the Corporation, viz., that the rate of wages and hours of labour should be such as are "determined by the London Trades Council," and substituted the conditions agreed between the Royal Institute of British Architects and the Association of Master Builders.

LONDON.—For fencing Silvertown, for the Corporation of West Ham. Mr. Lewis Angell, Borough Engineer, Town-hall, Stratford:—

Scotney & Co	£330 12 0	Watson & Hiscox	£209 19 8
J. R. Hunt	284 0 0	C. H. Binney	200 0 0
J. Jackson.....	250 0 0	J. J. Blanch.....	199 0 0
Barber & Co.....	247 17 0	M. Marshall.....	195 0 0
D. Barfoot	247 15 6	Rowland Bros.....	180 15 6
A. Carter	245 0 0		

LONDON.—For the erection of baths and washhouses, Hornsey-road, N. Mr. A. H. Tiltman, architect, 70, Torrington-square, W.C. Quantities by Messrs. Young & Brown, Covent-garden:—

J. J. Robson	£36,610 0 0	R. Avard	£32,690 0 0
B. E. Nightingale..	35,648 0 0	Patman & Fotheringham	32,663 0 0
Rowe Bros.	35,340 0 0		
J. Parnall & Son ..	34,940 0 0	J. O. Richardson ..	32,622 0 0
Stephens, Bastow, & Co.	34,729 0 0	Allan & Son.....	31,250 0 0
		A. Kellett	31,109 0 0
Brass & Son.....	33,333 0 0	Macfarlane*	30 960 12 5
Perry & Son.....	32,943 0 0		

* Reduced by arrangement and accepted at £27,476 0 0

LONDON.—For alterations to the Laundry Buildings, Fever Hospital, Hampstead:—

R. Steed	£3,108 16 0	H. Fowler	£2,825 0 0
Calnan & Co.....	3,000 0 0	Rowe Bros.	2,817 0 0
Godfrey & Son	2,897 0 0	G. A. & H. Wall, Kentish Town * ..	2,524 0 0
Aaron & Salter.....	2,847 19 9		

* Accepted.

MARTINSTOWN.—For the erection of a Wesleyan chapel at Martinstown, near Dorchester:—

R. Davis & Son, Dorchester (accepted)	£359 19 0
S. Barnes.....	351 0 0

NORTHAW (Herts).—For erecting new schoolroom and dormitories. Mr. Ernest Turner, architect, 246, Regent-street, W.:—

Jeeves	£2,221 12 6	Aldin Bros. & Davies*	£2,070 0 0
Holloway Bros.	2,130 0 0		

* Accepted.

PETERBOROUGH.—For erecting two cottages in Holdich-street, Peterborough. Mr. J. G. Stallebrass, architect, Peterborough:—

Wright	£390 0 0	Machin	£348 0 0
Sharpe	389 0 0	Jellings	345 10 0
Guttridge	363 0 0	Noble	340 0 0
Sibley	360 0 0	Wenlock	339 6 4
Nichols	360 0 0	Kidd	334 14 0
Bailey.....	359 10 0	Spencer (accepted)....	330 0 0

[All of Peterborough.]

REDLAND (Bristol).—For the erection of a pair of semi-detached villa residences, Montrose-avenue, Alexandra Park Estate, for the Bristol Capitalists' Association, Limited. Mr. A. Barratt, surveyor, Somerset-chambers, Corn-street, Bristol. Quantities not supplied:—

A Tambling	£1,262	E. Love	£1,150
Assets Purchase Co.	1,196	W. Podger (accepted)	1,145
D. Morris	1,185	[All of Bristol.]	

REDLAND (Bristol).—For the erection of a pair of semi-detached villa residences in Rokeby-avenue, Alexandra Park Estate, for the Bristol Capitalists' Association, Limited. Mr. A. Barratt, surveyor, Somerset-chambers, Corn-street, Bristol. Quantities not supplied:—

Assets Purchase Co.	£1,177	W. Podger	£1,050
E. Love	1,075	A. Tambling (accepted)	1,020
[All of Bristol.]			

RISCA (Monmouthshire.)—For the erection of police buildings at Risca, for the County Council of Monmouth. Mr. William Tanner, County Surveyor, County Council Offices, Newport. Quantities by the Surveyor:—

T. G. Diamond	£3,680	Wm. Price	£3,265
Morgan & Evans	3,525	Chas. West	3,150
J. McCarthy	3,301	John Linton,* Newport	2,899

[County Surveyor's estimate, £3,030.]
* Recommended by Committee for approval.

SOUTHMOOR (Durham).—For the erection of a school, at West Stanley, for the Tanfield School Board. Mr. J. Wm. Rounthwaite, architect, Blackhill. Quantities by the architect:—

Tyrie & Graham	£2,402 5	Routledge & Mordue,	
Joseph Elliott	2,184 0	Armfield Plain*	£1,825 0
Thomas Hilton	2,122 0	* Accepted.	

[A number of other tenders for the separate trades were also received.]

STOKE (near Coventry).—For the erection of a house for Mr. Jansen. Mr. Bradford Tomlinson, architect, Coventry:—

Gough	£427 0 0

SWANSEA.—For alterations and additions to premises in Orchard-street, Swansea, for Messrs. Simonds. Mr. T. P. Martin, architect, Swansea:—

T. Richards	£228 12 9
The Nelson Joinery Company	225 0 0
P. Jones & Son	225 0 0

TOLWORTH (Surrey.)—For the construction of a sewer in Douglas-road, Tolworth, Surbiton, for the National Land Corporation, Limited. Messrs. Pooley & Follett, surveyors, 21, John-street, Adelphi, W.C. Quantities supplied:—

Edwin Harris	£270 0	Wm. Cunliffe, Cromwell-road, Kingston-on-Thames (accepted)	£166 10
William Nicholls	190 0		
Stephen Kavanagh	175 11		

WEST DERBY.—For the construction of sewers in Derwent-road-passage and Mill-lane, Old Swan, for the West Derby Local Board. Mr F. C. Everett, Surveyor, Public Offices, Green-lane, Tuebrook, Liverpool:—

Derwent-road-passage.

Thos. Catterall & Co.	£105 0	W. Barrow & Son, Liverpool*	£59 10
R. Wearing & Son	95 0		
J. Wilde	72 10	* Accepted.	

[Surveyor's estimate, £56. 10s.]

Mill-lane.

Thos. Catterall & Co.	£555 18 2	James Wilde, West Derby*	£394 10 0
W. Barrow & Son	518 16 3		
R. Wearing & Son	479 0 0	* Accepted.	

[Surveyor's estimate, £420. 4s. 3d.]

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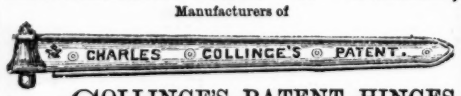

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[1891.]

I.	*Canterbury,	Drawn by	*The Editor*	Jan. 3.
II.	Lichfield	,,	*W. H Bidlake*	Feb. 7.
III.	St. Alban's	,,	*H. W. Brewer*	Mar. 7.
IV.	Peterborough	,,	*A. Mitchell*	April 4.
V.	Wells	,,	*R. W. Paul*	May 2.
VI.	Exeter	,,	*A. N. Wilson*	June 6.
VII.	Salisbury	,,	*The Editor*	July 4.
VIII.	Bristol	,,	*R. W. Paul*	Aug. 1.
IX.	Norwich	,,	*S. K. Greenslade*	Sept. 5.
X.	Rochester	,,	*H. W. Brewer*	Oct. 3.
XI.	Lincoln	,,	*John Begg*	Nov. 7.
XII.	Gloucester	,,	*C. E. Mallows*	Dec. 5.

[Further arrangements will be duly announced.]

* This number is *out of print,* but to prevent disappointment to those desirous of possessing the series complete, the VIEW, PLAN, AND DESCRIPTION have been re-printed, and they can now be had, price ONE SHILLING; by post, 1s. 2d.

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TO ARCHITECTS.—The Owners of a new Suburban Estate are desirous of meeting with an ARCHITECT who has had experience in the development of building estates. Preference given to one who can introduce respectable builders, and who has the command of capital for financing.-Address, ARCHITECT, Box P. 32,457, Smith's Advertising Agency, 132, Fleet-street, E.C.

REGENT-STREET (just off).—Two very large ROOMS on first floor, suitable for an architect, surveyor, tailor, &c. A private arrangement could be made with a quantity surveyor becoming a tenant.—BANCE, TALBOT, & CO. 16, Argyll-street, W.

PARTNERSHIP.—A Civil Engineer and Surveyor is desirous of PURCHASING PARTNERSHIP with an Architect and Surveyor, or with an Estate Agent, Valuer, and Surveyor. Country preferred.—State full particulars, which will be treated in strict confidence, to Box 154, Office of "The Builder."

ENGINEER and SURVEYOR, experienced in waterworks, sewerage, &c. with moderate capital, wishes to PURCHASE an established PRACTICE in London or provinces, or to enter a business with view to Partnership.—Replies, stating full particulars, to Box 151, Office of "The Builder."

THE CORPORATION of KINGSTON-UPON-THAMES invite Applications for the APPOINTMENT of INSPECTOR of Nuisances, Buildings, Barges, Dairies and Milk-shops, and House Refuse Collection, at a salary of 100*l.* per annum.
The person appointed will be required to devote his whole time to the duties, a definition of which can be had on application to me.
Applications, in the Candidate's own handwriting, accompanied by no more than three recent testimonials, endorsed "Inspectorship," and addressed to the Chairman of the Improvement and Sanitary Committee, to be delivered at my Office not later than MONDAY, the 19th instant.
Personal canvassing of members of the Corporation will be a disqualification.
By order.
HAROLD A. WINSER,
Town Clerk.
Town Clerk's Office,
Clattern House, Kingston-upon-Thames,
October 7th, 1891.

TOTTENHAM LOCAL BOARD of HEALTH.
APPOINTMENT OF BUILDING INSPECTOR.
The Tottenham Local Board of Health invite APPLICATIONS for the OFFICE of BUILDING INSPECTOR, in accordance with the terms of the Tottenham Local Board Act, 1890.
Candidates must be of the full age of 25 years, properly skilled and educated in the art and practice of building and drainage, and hold a certificate of the Royal Institute of British Architects, or of the Institution of Civil Engineers, or of the Institution of Surveyors.
Salary at the rate of 150*l.* per annum.
Further particulars will be supplied on application.
Written applications to be delivered to me not later than MONDAY, OCTOBER 19th, 1891.
Canvassing the members of the Board in any way will disqualify.
By order,
EDWARD CROWNE,
Offices, Clerk to the Board.
Coombes Croft House, High-road,
Tottenham, N.
October 9th, 1891.

ASSISTANT (Experienced) WANTED by an ARCHITECT, in the West-end, to take the entire management of the office. State terms and qualifications, with references, Box No. 265, Office of "The Builder."

AGENTS REQUIRED, for commercial districts (in which they reside) in Great Britain and Ireland, having a connexion with and calling upon architects, builders, decorators, &c.—Address, Mr. BAILLIE, 19, Goulton-road, Lower Clapton, London, N.E.

BUILDER'S ESTIMATOR and Manager WANTED, for the Midlands. One perfectly accustomed to measuring-up and adjusting accounts. Permanency. None but competent and steady men need apply. — Applications, with references, and stating wages required, to Box 251, Office of "The Builder."

WANTED, by a Firm of Timber Importers in the Midland Counties, a thoroughly competent STOCK-BOOK CLERK. Also INVOICE CLERK.—Address, stating age, references, salary expected, to Box 258, Office of "The Builder."

CLERK WANTED, in a country Builder's Office. Young Man with at least three years' experience. Early hours. State required salary and capabilities.—GIRLING & CO. Wisbech.

YOUNG MAN WANTED, as Builder's Clerk. Had experience in general office routine, able to trace neatly. Good references required.—State salary expected, by letter only, to WALLER, Builder and Decorator, 81, Church-street, Croydon.

JUNIOR CLERK. — WANTED, in the office of a Surveyor and Estate Agent, in a small town near London, a respectable YOUTH. Good draughtsman preferred.—Write to ESTATE AGENT, Willing's Advt. Offices, 162, Piccadilly, London, W.

BUILDER and DECORATOR'S COST CLERK WANTED. A permanent situation for a thoroughly competent steady man.—Apply by letter in first instance to Messrs. MARLER & BENNETT, 175 and 176, Sloane-street, S.W.

ARTICLED PUPIL can be taken by a City Architect.—Address, H. H. A. at Horncastle's, 61, Cheapside, London, E.C.

PARENTS & GUARDIANS.—A Vacancy occurs in an old-established firm of Builders for an APPRENTICE.—For terms and further particulars address, A. B. C. No. 57, Gore-road, Victoria-park, E.

SMART YOUTH WANTED, in an Architect's Office. Must be a good tracer and write a good hand. A knowledge of shorthand desirable.—Apply, by letter, to Box 261, Office of "The Builder."

WANTED, in a London Builder's Office, a sharp YOUTH, used to abstracting and squaring dimensions. Must be quick and accurate at figures. Salary, 15s. per week.—Address, J. J. M. at Horncastle's, London.

YOUTH WANTED, in a Surveyor's Office. Must write a good hand, be quick at figures, able to write shorthand, and willing to make himself generally useful.—Box 269, Office of "The Builder."

FOREMAN WANTED, used to laying out new roads and sewers.—Reply, with copies testimonials, wages expected, Box 264, Office of "The Builder."

TO CONCRETE PAVIORS.—WANTED, a WORKING FOREMAN, to reside in the Provinces. Must be thoroughly experienced in laying out, and fixing concrete stairs for public buildings, &c. None but first-class workmen need apply. —Send full particulars, with copies of testimonials, and stating wages required, to Box 257, Office of "The Builder."

MODEL MAKERS WANTED, for Architectural Terra-Cotta Winter's work. State age and wages required. None but good steady hands need apply. — JABEZ THOMPSON, Terra-Cotta, Northwich.

SLATE MASON and SLATER (Good) WANTED. Constant employment. — Address, stating age, experience, and wages, and any other information. (No testimonials).—Box 256, Office of "The Builder."

WANTED, skilled HIGH-PRESSURE FITTER, to take charge of job.—Address, J. 7, Little Queen-street, Westminster.

WOOD BLOCK FLOOR LAYERS.—WANTED, a PRICE per yard super for laying about 300 yards herring-bone pattern 3 in. Blocks, at Lewisham. Only experienced men with good references need apply, by letter only, to S. 14, Bournemouth-road, Peckham, S.E.

MACHINIST WANTED, in North London, used to Elephant and Tenoning Machine.—Box No. 263, Office of "The Builder."

MACHINIST (Good) WANTED. JOINER. To work circular saw, planer, vertical spindle, and gas engine. — Apply, stating age, wages, and references, to W. A. CHAMBERS, Builder, Colchester.

MACHINIST WANTED, to WORK a Vertical Spindle Moulding and Recessing Machine. Apply, stating previous experience and wages required, to Box No. 262, Office of "The Builder."

WANTED, JOINERS, to take WORK by the Piece.—Address to Box 260, Office of "The Builder."

APPRENTICE WANTED, by a West-End Builder and Decorator. Premium required.—Apply by letter, in first instance, to K. 3, care of Mr, Turner, Stationer, 15, Victoria-grove, Kensington.

PLUMBER and HOT-WATER FITTER (Good Jobbing Hand) WANTED, for the country. Willing to fill up time painting, &c. Constancy for a suitable man. Abstainer preferred. State age and wages. Reference required.—E. FINCH, Builder, Liss.

POINTERS WANTED, to Rake Three-quarter inch, and point neat cut and struck joint. State jobs done and price in writing to M. 34, Canonbury-road, N.

BRICKLAYER (Good) WANTED. Constancy if suitable. One used to jobbing and can turn his hand. Full wages given. Character required. Abstainer preferred. —Apply, 28, Church-row, Hampstead.

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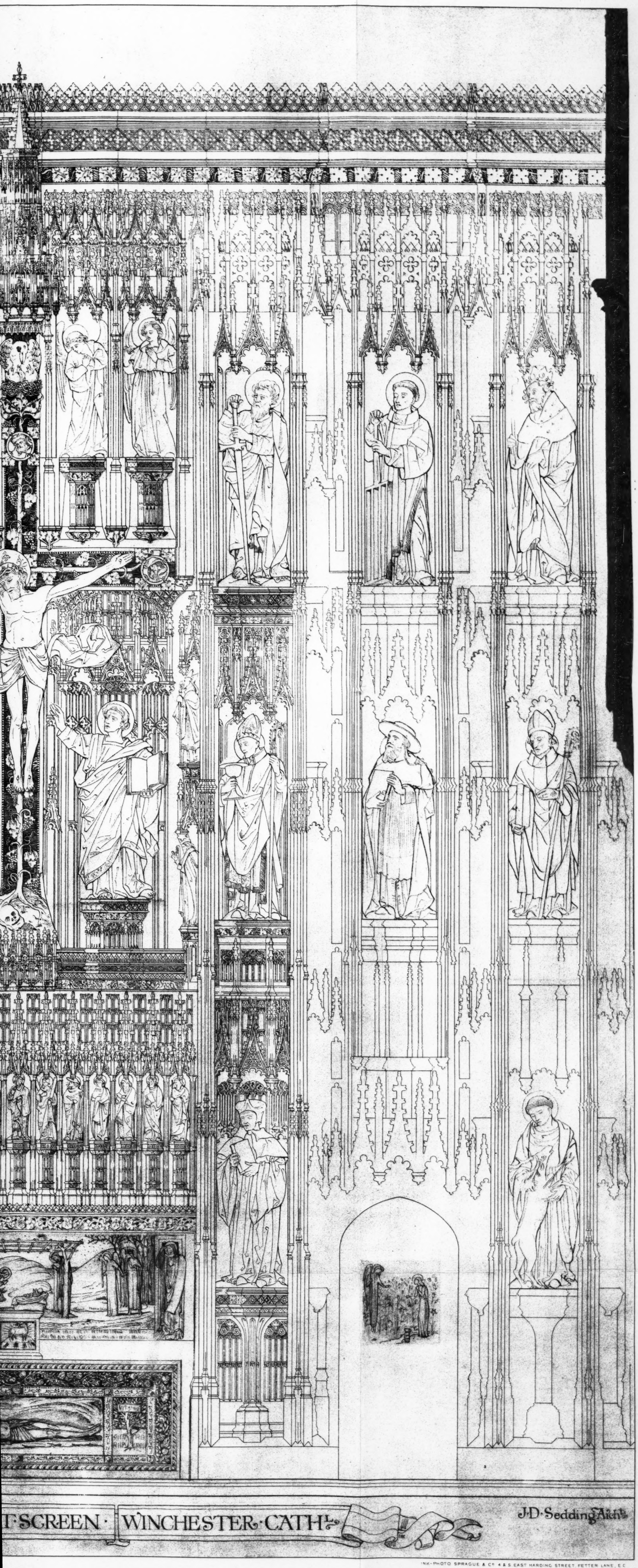

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